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ADDRESS.

THE present is, undoubtedly, the most important period that has yet arrived in the history of Dental Science. Within the last few months the dentists of England have entered on a movement, the result of which will be a professional crisis of vast moment to all engaged in the practice of dental art, as well as to the great public of the British empire. The dentists of this kingdom to a man—we, of course, exclude the quacks—are agreed that their position, as a scientific and artistic body, has hitherto been anything but what it ought to be; that while no branch of the medical profession can boast of more skill in its peculiar department, than that for which the properly qualified dentists of England are renowned throughout the civilized world; that though there are no two things more dissimilar than real dentistry and that wretched charlatanism, which but too often assumes its name; still, there are wanting to the followers of this noble science, those professional land-marks which alone can effectually separate the demeane of cultivated art from the high-ways of vulgar and health-destroying quackery. Qualified and able dentists there are, in abundance; but the impostors are a legion. They swarm in the metropolis; and scarcely any provincial town is "without the pale" of their swindling operations. To the great practitioners—the men who have for years, in the mind of the public, been identified with the cure or alleviation of all the ills to which the teeth are heir—this wide-spread quackery matters little, in a pecuniary sense. They have made their fame; and the catchpenny efforts of the charlatan cannot unmake it. These eminent men, therefore, only suffer *quoad* their

professional *status;* which is affected from the facility given to impostors for the assumption of an honourable calling. But the matter is much more serious to the young dentist, who, having by a long course of study and mechanical application, made himself a skilled member of his profession, is yet obliged to enter into competition with unscrupulous humbugs, who know about as much of dental science or dental mechanism as did those learned blacksmiths who, a century or two ago, were accustomed to extract teeth of rustic patients with that delicate forceps—a pair of forge-tongs. Your modern quack does his patients in a more drawing-room fashion than did these humble disciples of Vulcan; but his dental acquirements are not, in very many instances, one whit more profound.

Now, it is monstrous that the public should have no means—except, as we have before observed, in the case of men of distinguished eminence—of knowing who is the *dentist* and who the *empiric;* and that thus the *salus populi* and the legitimate professors of one of the great branches of the healing art should so suffer from a class whose very existence would be ignored if the dental profession occupied the position which it should be placed in.

We hope to see all this changed very speedily. Some exertion will be required; but the work is a grand one.

We believe it to be one of great public importance; and to assist in it, is the object for which the *Quarterly Journal of Dental Science* has been established. How we mean to do so, will be seen in this, our first number.

We shall hold ourselves independent of all sections or cliques. Our ambition is to become the organ of the dentists of England; and we shall conduct ourselves accordingly. We believe that the means best adapted for achieving what all desire, are those which have been adopted by the College of Dentists of England; and, therefore, so long as the council of that body adheres to the principles promulgated in its general laws,

and which were expounded more in detail by the president, at the inaugural meeting, so long shall the institution have our warm support. At the same time, we are not going to denounce those who may think proper to differ from us. We shall rather try to bring them to our side by argument; and our columns shall be ever open to full and fair discussion. As abuse is not argument, we shall neither be personal ourselves, nor allow correspondents to make use of the *Quarterly Journal of Dental Science* as a vehicle of personality.

All matters of professional interest, whether home or foreign, shall be recorded in our pages; including special reports of such hospital cases as exhibit phenomena, or novelty of sufficient importance to deserve a place in a publication which is intended to be a medium of communication between members of the profession at large, and of instruction to the student.

Our Journal shall be educational; for we regard the aphorism of Diogenes—Αρχὰ πολιτείας απάσης νέων τροφὰ—to be as applicable to bodies corporate and professions, as to states. With this view, we shall devote a good deal of space to papers on dental study—surgical and mechanical; and, whenever necessary, illustrate those papers by wood-cuts, the work of first-rate artists.

All the transactions of the College, including notices of the lectures, shall regularly appear in the *Quarterly Journal of Dental Science.*

Thus do we hope to aid in uniting and elevating the profession:—by doing battle for the general rights; conveying instruction to the student; and keeping all practitioners and pupils throughout the kingdom informed of the current proceedings of the College of Dentists, as well as of every other matter pertaining to either the social or scientific interests of their profession.

THE PROFESSION.

THE establishment of a great institution for uniting together the members of the Dental Profession, and educating their pupils, is an accomplished fact. It was a work long desired; the necessity that existed for it was universally admitted; but till within the last few months, nothing effectual was done to reduce to practice the long-held and indisputable theory, that professional union and professional education are essentials in the dental, as they are in every other profession, desirous of upholding its respectability and maintaining its proper position in society.

No one has been bold enough to stand up and deny the importance of dental science and of the practice of the dental art. On the contrary, the general complaint—a complaint not by any means confined to the dentists themselves—has been, that the dental profession did not occupy the high position to which its antiquity, the benefits it conferred on mankind, and the amount of study, practical and theoretical, necessary for its members, all justly entitled it. No man has said that the dentists of this country occupied too high a position in the social scale; but every body, who expressed an opinion on the subject, has said that they were not elevated high enough. On this fundamental point, therefore, there is no difference or dispute; and that is a great matter for the profession.

"Let us unite in one recognised body, and enable our qualified pupils to show to the world that they are dentists and not quacks;" this is the language that has been held by every respectable member of the profession. "But, how shall we do it?" is the question which has given rise to a difference amongst the dentists of England, which it would be worse than affectation to deny, though parties are by no means equally divided.

Now, we do not think it will require any very distinguished logical powers to show that to annihilate a profession is not the way to elevate it; yet that is what some of our dental reformers would appear to us to

argue. We do not mean to accuse the eighteen gentlemen who memorialised the College of Surgeons, and subsequently—for we believe they were the very same parties—founded the Odontological Society, of a wilful design to extinguish dental practice as an independent branch of the healing art; but we do say, that if those gentlemen obtained what they asked, there would be an end of dentistry as a separate profession; it would be merged into pure surgery; and those young dentists who have to make their way, not by signing M.R.C.S. after their names, but by a thorough knowledge of their profession, might forthwith betake themselves to the other side of the Atlantic, where their calling occupies its proper *status*. The eighteen gentlemen who, of their own motion, secretly, and without any notice whatever to the profession at large, undertook to speak to the College of Surgeons for the dentists of England—for if they did not their memorial was not worth the paper it is written on—thus opened their case:—

"We, the undersigned, feeling that the department of Dental Surgery in England, in the absence of any recognised qualification, is wanting in that character and position which its importance merits, have consulted together to devise some means whereby a standard of qualification may be established."

Leaving out of consideration, for the present, what appears to us to have been the very unwarrantable presumption of these gentlemen, respectable as all, and eminent as several, of them are, in having taken such a step as that without previous consultation with the great body of the profession, we wish to express our entire concurrence in the proposition thus laid down in the opening paragraph of their memorial; and we also avail ourselves of the following acknowledgment made in another portion of the same document:—

"In America, the necessity of a special course of study was felt, and this led to the establishment of Dental Colleges, where the subjects necessary for the education of a dentist are taught; and the student at the end of his pupilage is examined, and if found competent, receives a diploma in testimony of his fitness to practice.

"These institutions send forth into the world, year by year, numbers of qualified dentists, who in virtue of their diplomas assume a superiority over all other practitioners, and are consequently regarded with confidence by the public, who reasonably look upon the possession of a special qualification as an indication of superior professional merit."

After this, one would naturally have expected that the eighteen memorialists were about to express a strong anxiety for the establishment in this country of an institution similar to those which, on their own

showing, have effected all that could be desired for the profession in the United States. But no. Their argument is: "Independent educational establishments for the dental profession have worked well—have been of infinite service to both the profession and the public—in the United States: therefore we don't wish for an independent Dental College here. Tack us on to the tail of the College of Surgeons, and we shall, as in duty bound, ever pray." Those are not their words, but that is the meaning of what they ask, if it have any meaning at all. To prove that we do not exaggerate, we shall give the very prayer of their petition Here it is:—

"We, the undersigned, beg to submit to the President and Council of the College of Surgeons, whether an examination in the department of Dental Surgery, as in Midwifery, might not be instituted.

"The adoption of such a course would, we are sure, prove a great boon to practitioners, and would, at the same time, secure a manifest advantage to the public."

With all due respect to the eighteen memorialists, "the adoption of such a course" would neither "prove a great boon to practitioners" nor "secure a manifest advantage to the public." We have too high an opinion of the members of the profession to imagine that the deprivation of their independence could be considered by them as a great boon;" nor do we see how "a manifest advantage" could be secured to the public by diplomas being granted to dentists by men not competent to examine them. We repeat, "by men not competent to examine them;" for we utterly deny that the College of Surgeons is competent to examine dentists in the surgical-mechanical—which is by far the more important department of their art. This is an opinion which we know to be shared by some of the most distinguished members of that College; and medical publications have not hesitated to avow it as their opinion also. What says the *Medical Circular*—

"A certain section of the profession seem to think that the College of Surgeons should examine men as to the most scientific way of taking moulds of ill-conditioned jaws, and of making false-teeth of elephant's tusks. In that case, Lawrence must commence an apprenticeship at the bench, and Stanley take a turn at the lathe. We have no objection to this, only that we should soon make a demand for a new College of Surgeons."

We can quite understand why members of the College of Surgeons, who are also dentists, should wish to merge the dental in the surgical profession; though their inconsistency in alluding to the American Colleges of

Dentists is glaring and foolish, these colleges making a triumphant case against what they ask: but how any dentist who is not an M.R.C.S. could have been induced to join in so suicidal a movement, is what we cannot understand. It is quite true that there are only three or four such names out of the eighteen signed to the memorial, the rest all being members of the College of Surgeons; but many dentists who have no connexion with that college have joined the Odontological Society, whose object is the very same as that of the memorialists. In fact, the memorialists are the Odontological Society, and the Odontological Society are the memorialists; and their proceedings, except in the unhappy matter of citing the American Colleges, have been singularly consistent. In secrecy they got up the memorial; and in secrecy they formed their society and elected themselves their own council. If these gentlemen thought that their memorial would really stand the test, and obtain the approval of the body of the profession, why did they not strengthen their own hands by submitting it to the profession, and then sending it to the Council of the College of Surgeons, as "the Memorial of the Dentists of England," and not what it really was, the humble petition of eighteen gentlemen, who wish to associate themselves with a body that has never solicited a connexion with them; that has not even deigned to reply to their humble supplication. Again, if these same gentlemen thought that the principles and objects of the Odontological Society—and, by the way, to this hour they have never told the public what either are—were likely to find favour with the profession, why did they not attend the great meetings of the profession, held at a time when all matters of detail were yet open, and neither the College of Dentists nor the Odontological Society was yet formed? Or why did they not themselves call public meetings of the profession, and court that full and free discussion amongst its members, which has resulted in the establishment of the College of Dentists? We should like to hear these questions answered; and we should also like to hear from the memorialists and Odontologicals, why they approve of Dental Colleges in America and disapprove of them here? But we fear that we shall have to wait a long time for a reply to these questions. We trust, however, that these gentlemen will see that their position is not tenable; and that they will lend their aid to the great educational system which the College of Dentists has been established to carry out. As they have adopted the practice of dental art as a profession, let them not sacrifice the independence of this profession to any veneration for even so distinguished a body as the College of Surgeons. They may rest assured that that College will not call dentists into its councils. It has never encouraged specialities. When has it placed an aurist or an

oculist on its council? Nor will it call dentists within the sanctorum of its deliberations, or thank them for laying their independence at its feet. "Oh, but," say some wise people, "dentistry is a branch of surgery, and, therefore, why should it have a separate college?" Apothecaries are rather closely allied to physicians; and yet they have a separate educational establishment; a separate society, and a distinct character for their hall; although it is manifest that a College of Physicians would be much more competent to examine apothecaries, than would a College of Surgeons to examine dentists on the manufacture of artificial teeth. We speak with all respect to the College of Surgeons and the professors of pure surgery.

"Distat opus nostrum; sed fontibus exit ab isdem;
Artis et ingenuæ cultor uterque sumus."

Let the dentists cultivate that branch of the curative art which it is their lot to follow; and, above all, let junior practitioners remember that any movement subversive of the independence of their profession, must be destructive to their own best interests.

THE LANCET AND THE COLLEGE OF SURGEONS.

THE *Lancet* is exceedingly annoyed by the College of Surgeons not having replied to the humble petition of the eighteen gentlemen, whose proceedings, in reference to the dental profession, we have adverted to in another place. "We have not," says our contemporary, "heard that any definite or official reply has yet been vouchsafed to this petition, though twice urged;" and, again, "this delay on the part of the College was neither politic nor polite."

Now we cannot agree with the *Lancet*. We think "this delay" was, and is, both "politic and polite." We believe that the College of Surgeons has best consulted its own dignity, by utterly refusing to recognise the pretension by these dozen and half of gentlemen of a right to speak for a body so numerous and important as the dentists of England. It would appear from the statement, that the petition has been "twice urged;" that the petitioners are becoming a bore to the Council of the College; and we shall not be surprised if their urgency be at last met with a reply that will be worse even than silence to the humble supplicants, who do

not seem to know when they have received a dignified hint to cease their unauthorised importunity.

But hear some of the *Lancet's* reasons for regretting the course taken by the College of Surgeons:—"Hence the machinery of a Dentist's College has been independently arranged. Such an institution is in every way objectionable. Its adopted independence cannot be maintained without clashing with the interests of other institutions, and it affords a bad precedent." Surely, it would be a waste of time to reply to assertions such as these; contradictory on the face of them, and not sustained by one scantilla of proof. The *Lancet* does not prove its own case; but it does ours. We shall willingly make it a present of its assertions, so long as its arguments are all on our side. "If," says the *Lancet*, "the charter (*i.e.* of the College of Surgeons) allows the admission of licentiates in midwifery—a *branch of the profession ignored by the surgeon*—it can only be by a quibble that practitioners of dental surgery are excluded." Now, we shall let the *Lancet* deal with its hypothetical quibble, and avail ourselves of the fact which it throws in parenthetically. Midwifery is *ignored* by the surgical profession, though the College of Surgeons grants the accoucheur his diploma. Will any one pretend that dentistry would meet with more favour?

So much for the leading-article arguments of the *Lancet* against the College of Dentists. We now come to its logical deductions, under the heading, "To Correspondents"—

> "*A Member of the College of Surgeons* suggests, that if the two bodies which now exist—one styled the College of Dentists, and the other the Odontological Society—cannot satisfactorily settle their differences, that members of the College of Surgeons should take up the subject, and establish a Royal Dental Institute, with a view to effect encouragement of a most important branch of surgery. Our correspondent is of opinion that Mr. Bell, F.R.S., would accept the office of President of such an institution, and the best men from the other two institutions would at once join the Dental Institute, and for which, without doubt, a charter would soon be obtained from the Crown."

And is this what the Odontologicals and the *Lancet* are driven to at last? If the independence of the College of Dentists is objectionable in the eyes of the *Lancet*, why should not that of the "Dental Institute" be so? We suspect that our able contemporary is only laughing at the memorialists, and that the foregoing paragraph is merely an *argumentum ad absurdum*. We do not believe that the *Lancet* would be a party to so ridiculous an attempt at a job as "a member of the College of Surgeons" sketches out.

If, on the high ground of maintaining the independence of their profession, the dentists of England object to have their calling made subordinate to surgery, by even so great a body as the College of

Surgeons, they are not likely to surrender that independence into the hands of a clique of surgeons. Such a scheme as that may suit the views of the dozen of M.R.C.S.'s, who, with their six fellow petitioners, await an answer from the Council of the College; but it will receive no attention from the profession. It is a shabby attempt to imitate what has been done by those who established a College of Dentists, and deserves no further notice.

Dental Surgery and Mechanics.

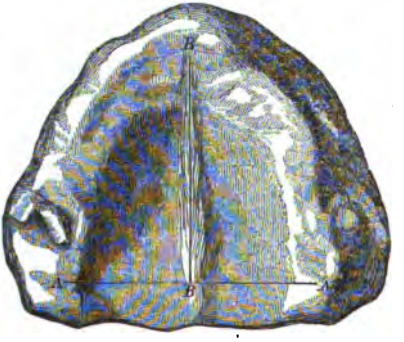
Case in which the Upper Jaw was entirely free from Teeth at Nine Years of Age.

By Mr. Samuel Parker, Birmingham.

The following interesting case came under my notice, at the Middlesex Hospital, in June, 1854:—

A boy, nine years of age, came from the country, attended by a young woman (from whom I learnt the history of the case), for the purpose of having a temporary lower molar extracted.

The permanent teeth already cut in the lower jaw were regular and well-formed; but the upper jaw, as represented in the engraving, was entirely free from temporary or permanent teeth.



The jaw was much smaller than is usual at such an age, and measured from A to A 1⅛ inch, and from B to B 1⅜ inch.

The average size, according to models in my collection, being 2 inches from A to A, and 1⅛ inch from B to B.

I was informed that the temporary teeth had all been removed at different times, on account of pain; and that the jaw had been without teeth for nearly four years.

At the time I saw the boy, one tooth had just pierced the gum, which proved upon examination, to be the bicuspid of the left side; but there was not the slightest appearance of any others coming.

Many cases are on record in which one or two permanent teeth have been wanting; but the case just quoted appears to be the first in which *all* were absent. The absence of one or two permanent teeth may be accounted for by the non-appearance of the fungous or carneous substance (observed by Lafrogur, and more carefully investigated by Detabane) behind the root of the temporary tooth, and supposed to be placed there for the purpose of carrying out the process of absorption. "If this fleshy tubercle," says Detabane, "fails to be developed, or is distroyed by injurious operation, the permanent tooth frequently remains in the socket, and never makes its appearance."

How are we to know in the living subject, whether this substance is developed or not? And are we to suppose that by the absence of all the permanent teeth, as in this case, the fleshy tubercle of Detabane's had not been developed, or had been destroyed by injurious operations?

There can be but little doubt that the early extraction of the temporary teeth had been the cause of a greater part of this mischief; as such extractions are well-known to be the cause of a great many dental irregularities. I have just seen in the *Dental News Letter*, for January, 1857, a case of a toothless person. "A Mr. W—— recently died, at an advanced age, who never had a tooth. His gums were very hard, and much resembled those of a catfish." A model of the first case is to be seen in the Museum of the College of Dentists of England.

February 7th, 1857.

Death from an Exostosis of the Fang of an Upper Molar Tooth, with Remarks on this peculiar form of Disease.

By J. L. Levison, D.D.S.

Prior to offering any remarks on the pathology of that form of disease, known as Exostosis, it is important to give *in extenso* the history of a case in which a bony tumour on the fang of a second molar, both of the upper jaw, was considered to have been the predisposing cause of the death of an individual.

In the year 1825, having visited Hull, in Yorkshire, professionally,* I

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* My esteemed friend, Dr. Alderson, was particularly pleased by my remarking that a peculiar form of disease of the gums was endemical at Hull, and that it seemed to me to result from the town being built on an alluvial soil, thrown up from time to time by the Humber. That in consequence of this local circumstance, and the great humidity of the atmosphere, derangement of the digestive organs resulted; and that the affection of the gums might be regarded as sympathetic, &c. From the respect I entertained for Dr. Alderson, I dedicated my first *brochure* to him.

was introduced to Mr. Higson, the then House-Surgeon to the Infirmary, who kindly offered me any of the diseased jaws, teeth, &c. in his possession.

On examining the collection, I must confess, that there was one tooth which would have induced any one with my professional ardour to run the hazard of nominally breaking a commandment—for I certainly must confess, "I did covet my neighbour's tooth;" because there was one of the best defined bony tumours (exostosis) on one of the fangs that had ever been seen. Mr. Higson asked me, on my replacing it, "what would you suppose would be the symptoms resulting from such an extreme form of exostosis? I replied, "why extensive local inflammation arising from the pressure of the tumour on the periosteum of the alveolus, probably extending the disturbing influence to the antrum." But he continued thus:—"What would you say, if I were to tell you that this tooth occasioned the death of the patient?" "How, and in what way?" was my answer. Mr. Higson then said, "a poor man was brought to the hospital with a very red and swollen face. The antrum was implicated, and the parotid gland on the one side highly inflamed. The conjunctions were both much injected, rendering the eyes blood-shot. The nostril on the affected side was greatly enlarged with an erysipelatous appearance. He was very feverish; and though the usual remedies were tried, and the face poulticed, he became worse and worse.

"The brain became sympathetically affected, with evident signs of phrenitis; for he raved and chatted in a most incoherent manner, and continued delirious for a night or two; and ultimately sank under his intense suffering, until he paid the common debt of nature."

My informant continued, "as this was not an ordinary case, and the patient an unknown pauper, I determined to make a minute examination of the body; but after doing so, found nothing abnormal either in the thoracic or abdominal viscera, and only certain appearances of the brain, evidently the result of its recent inflammatory condition, and thus these did not furnish any satisfactory evidence to form, under similar circumstances, any correct *diagnosis* in any way worthy to be depended on as a means of cure."

Recollecting that the affection seemed to originate in the mouth, Mr. Higson was induced to make a careful examination of the jaws and teeth, and he found unmistakable evidence of serious injury of the *alveoli** of the second and third molars. He therefore determined to cut them down, in order to notice the teeth *in situ*, and he observed what appeared a hard clot of coagulum on the fang of one of them. After washing it repeatedly, it proved to be a more than usually sized bony tumour, and this he considered was the predisposing cause of the death of the poor fellow. Mr. Higson gave me the tooth. Having repeatedly examined it, and others by means of the Stanhope lens, I venture to offer a few pathological observations on this form of osseous disease. Before doing so, it is my intention to submit a case, which is one among very many similar kinds that I have treated, as furnishing more satisfactory *data* for the subsequent opinions to be submitted.

Mr. S.——was the son of a clergyman. He was a tall, thin, intelligent young man, about twenty years old, with a nervous temperament. He had inherited a great love for knowledge, and had neglected his rest from the ardour of this mental intensity, when ultimately he suffered from stomach derangement, and painful affections of his teeth.

* I am sorry that Mr. Higson could not be certain that there did not exist an alveolar exostosis, having seen in very bad cases that this condition has often greatly aggravated the inflammatory condition of the mouth.

When he came to see me, one side of his face was highly inflamed, implicating one side of his nose, one eye, and the parotid gland. He also complained of great agony in the ear.

The tooth he referred to I refused to extract, but insisted that the second molar of the lower jaw in the affected locality, was the actual cause of all his suffering. There was that peculiar vitreous appearance which is an outward and visible sign of chronic inflammation. He consented to have the one extracted which I had condemned, but there was so much resistance that the fangs seemed anchylosed. But by patience, and gradually raising it (all the time poor S—— roaring like a bull), it was removed without even the slightest splinter of the alveolar process. The fangs appeared red, as if injected with vermilion, but on being well and repeatedly washed, there appeared a distinct covering with a recent deposit of a harder kind of bone than either *dentine* or the *crusta petrosa*. From microscopical examination of this and many others, it seems an inevitable inference, that the additional bony deposit which forms the exostosis, is induced by *metastasis*. In such cases there has invariably existed a continued inflammation of the crown and neck of a tooth. The *modus operandi* may be difficult to determine, yet it seems to be similar in kind to the condition of the bones, when anchylosis of the vertebræ occurs. This particular inflammatory state must induce an abnormal secretion of the osseous material, like when a tibia or other bone is fractured. We know, in the latter cases, that the arteries deposit bony matter (lime and gelatine) instead of blood, and the fracture is repaired. And in the innumerable cases of *exostosis* I have attended (the notes of which are in my possession), there is not a single instance where there has not been an inflammatory condition of the tooth and socket, and that of a chronic character.

The only remark I ever met with which specially confirms the theory just advocated, is to be found in the "Dublin Quarterly Journal of Medical Science," for August, 1855. In this number there is an article, "Virchow, on Calcareous Metastases," and if I mistake not, as I write from memory, the author also thinks, that in cases of exostosis, the carbonate and phosphate of lime are eliminated from the crowns of the teeth, and are then deposited on their necks and fangs. But the œtiology in case of exostosis, must not be confounded with what occurs in rachites,* for the latter seems, according to Meyer, to result from hypercœmia of the periosteum, or, in other words, that the *rachites* is but a consequence of pereostites, whilst I apprehend that in exostosis, the peculiar inflammatory condition of the osseous substance of the crown acidifies the saliva, which does not affect all the teeth similarly, but simply the one predisposed to have its molecules disentegrated from a particular idiopathic condition.

I may, in another paper, venture to give the symptoms and phenomena which furnish the most satisfactory diagnostic signs how to distinguish this form of disease from ordinary caries, and from other odontalgic disturbances. Information I am compelled to defer, as this paper is longer than I had anticipated.

19, Dorset Place, Dorset Square, Feb. 20th, 1857.

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* Rickets.

Total ablation of the inferior Maxillary Bone for an enormous fibrous Tumour, developed in the interior of this bone.

Condensed translation of "Observation communicated to the Academies of Science and Medicine, at their sittings of the 12th and 13th of May, 1856."

Isamat Jerome, aged 33 years, entered the hospital la Pitié, at Paris, the 11th of April, 1856, to be treated by Mr. Maisonneuve, for a grave affection of the inferior maxillary bone. This affection, which the patient states, first made its appearance more than eight years ago, commenced on the right side of the face. It first manifested itself by a diffused swelling on the track of the bone; then the gums swelled, the teeth were pushed upwards, soon became loose, and fell out. In their place appeared a hard, fibrous tumour, which invaded little by little the interior of the mouth, whilst the bone continued to enlarge and project on the exterior.

The disease progressed so slowly, and with so little pain, that the patient gave it scarcely any attention. It is only within the last eighteen months that the difficulty of speech and of deglutition, joined to the hideous deformity of his face, forced upon him the idea of submitting to regular treatment. For about a year he was submitted to the use of mercurial iodureted and sulphurous preparation, without any apparent benefit. He renounced at last this treatment, and by the advice of the country physician, started to Paris to consult the masters of the art. All were of opinion that his existence was seriously menaced and that an operation offered him the only chance of safety. At that time the disease occupied almost the entire maxillary bone; only that the development of the right side was much more considerable than that of the left. On the right side the exterior tumour equalled in size the fist. In the interior it pushed back the tongue and the palatine arch, and filled the greater part of the buccal cavity. On the left side, the tumor was much less prominent; but it was easy to perceive that it extended to the base of the vertical branch. At all these points the tumour was firm and resisting; on the exterior, it had the hardness of bone, whilst in the interior of the mouth it gave a fibrous sensation. Its alveolar face, entirely deprived of molar teeth, presented a deep groove into which fell the superior dental arcade; in front, on the contrary, and to the left side, the teeth were complete, and only slightly deviated from their normal direction. The mucous and cutaneous integuments presented no alteration, and glided naturally upon the tumour. There was no engorgement of the ganglions, and the general health was excellent. Such was the condition of the patient, when on the 15th of April, M. Maisonneuve proceeded to the operation.

The patient being submitted to chloroform, M. Maisonneuve divided vertically the inferior lip of the median line, and continuing the incision horizontally on the right side, he divided deeply the soft parts to the masseter muscle. In the second part of the operation, he divided the maxillary bone on the median line by means of the chain saw; then, with the end of the finger and the blunt end of the scissors, he detached the soft parts from the bone, taking care to detach at the same time the periosteum. This part of the operation was tedious and difficult, on account of the volume of the tumour and of its projection towards the throat. In the fourth part of the operation, M. Maisonneuve gave to the bone a vibratory motion in order to bring forward the coronoid apophysis; but the bone, too fragile on account of the distention of its fibres, broke below the apophysis. Then the surgeon, seizing the latter with a forceps,

drew it forward, divided the tendons of the temporal and external pterygoid muscles with the curved scissors and terminated this part of the operation by extracting the condyle. The greatest difficulties had been surmounted. The other portion of the maxillary, although profoundly diseased, was far from offering the same degree of tumefaction; so that the skilful operator did not deem it necessary to divide the external soft parts. After dividing the mucous membrane of the alveolar process externally and internally, he enucleated the bone from its periosteum, and divided with a stroke of the bistoury the inferior dental nerve; he then tore with his finger, near their insertion, the masseter and internal pterygoid muscles. Then vibrating the bone in order to draw forward the coronoid apophysis, he divided with the curved scissors the tendon of the temporal and that of the external pterygoid muscles, and, by a rapid movement of extraction, terminated the operation. The extirpation of the right lateral half had required three ligatures; that of the left half required none at all. A few folds of lint were introduced into the species of cul-de-sac corresponding to the condyle, and the adjustment of the parts was proceeded with. By an excess of prudence, and notwithstanding that the tongue showed no tendency to fall backwards, M. Maisonneuve deemed it advisable to pass a thread through the base of the frænulum; he then brought together the two edges of the divided lip as well as the borders of the horizontal wound on the right side with twisted points of suture, on which he fixed the thread that held the tongue.

Immediately after the dressing the patient swallowed, without very great suffering, a few mouthfuls of water and sweetened wine. Yet it was thought preferable during the first two days to nourish him by means of the œsophagean tube. The accidents of this grave operation were of an unlooked for simplicity. There was scarcely any traumatic fever. The union of the external wound took place by first intention, in the nine-tenths of its extent. After the second day the lint was removed from the interior; the fourth day the pins were removed. From that moment the cure seemed certain; and in fact the appearances were not deceptive.

Four weeks only have passed since the operation, and the cure is so perfect that it is difficult to believe all that has passed. The face, from its monstrous deformity, has become regular; the most acute eye has difficulty in finding the traces of the cicatrix; the movements of the mouth are preserved intact; the tongue has recovered all its movements; speech is clear and easy; deglutition takes place without obstacle, and already, in the place of the maxillary bone, a dense and resisting tissue is being developed, due to the entire preservation of the periosteum, and which later on may perhaps undergo an osseous transformation.

Description of the Anatomical Piece.—The anatomical piece represents the inferior maxillary bone entire, completely deprived of its periosteum. It will be seen that at the condyles, at the angles and at the coronoid apophyses, there are portions of muscular fibres belonging to the masseters, to the two pterygoid and to the temporal muscles.

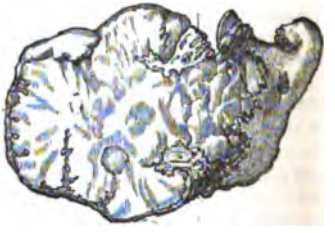
On the right side, this bone forms a tumour of the volume of the fist, constituted by the presence of a fibrous production, which is developed in its interior, and has thus spread out its fibres to the point of reducing them to a thin and transparent shell. On the left side, the alteration is less advanced; yet the bone is tripled in size, and the fibrous production has formed, through the whole extent of the horizontal portion, a long canal of from two to three centimetres diameter.

The tissue of the morbid production is essentially fibrous, without any mixture of cancerous corpuscles either epitheliæ or fibro-plastic.

1.—Daguerreotype portrait of the patient three weeks after the operation.

2.—Entire jaw with the tumour.

3.—Section of the right side, cut in its length.



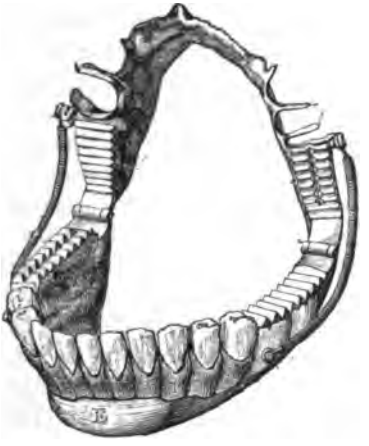
4.—Section of the left side, cut in its length.

At the sitting of the Imperial Academy of Medicine, on the 12th of August, 1856, M. Maisonneuve presented the patient, on whom he practised some months before, the complete ablation of the inferior maxillary bone, and for whom he had since caused to be made an artificial maxillary. M. Maisonneuve demonstrated on this patient the complete absence of any trace of mutilation, and the facility with which the various movements necessary for mastication and speech were performed.

At the sitting of the same Academy, on the 2nd of December, 1856, M. Robert, surgeon of the hospital Beaujon, presented in the name of Messrs. Fowler and Preterre, American dentists, an artificial piece executed by these artists, and destined to replace the inferior maxillary bone in the patient.

The contrivance is thus composed :—

1.—Of an upper piece, constituted by a plate of gold, which derives its points of support from the superior dental arcade and the anterior part of the palatine arch.



2.—Of an inferior piece (the essential part of the construction), formed of a dental arcade in mineral teeth with attached gums, and fixed

on a base in gold, which is moulded to fit into the soft part. This piece is articulated with the superior by means of a hinge and by two springs which, by their elasticity, favor the opening of the two dental arcades.

By means of this piece, the inferior part of the face finds a point of support, the lip is sustained, and the visage recovers all its regularity. The mouth may be opened more widely; the patient speaks with more facility, and can raise his voice to the proper height for all neccessary utterance. He can now crush substances of a certain consistence, such as crusts of bread, meat, fruit, &c.; and this faculty was quite impossible before the insertion of the artificial piece.

At the meeting of the Society of Surgery, on the 3rd December, 1856, an interesting discussion took place on the merits of the ingenious contrivance of Messrs. Fowler and Preterre, and the thanks of the Society were voted to these gentlemen.

ON THE DESTRUCTION OF TEETH FROM THE CHEMICAL ACTION OF THE MUCOUS FLUIDS OF THE MOUTH.

By Mr. Donaldson Mackenzie, Saville Row.

In the *Medical Times and Gazette* number for Oct. 28th, 1854, I submitted to the medical profession my view of the cause of caries of the teeth, which I stated to be caused by corrosive depositions from the fluids of the mouth destroying the enamel structure, &c.

Since that time, a very valuable work has been published upon the Principle and Practice of Dental Surgery, by Dr. Harris, of Baltimore College. In his article upon the cause of caries, he takes a similar view to that which I had published, and the principle is now being gradually recognised in England; but the conviction seems to be still encumbered by a certain old leaven of pulpified food, &c. becoming acid by retention in or between the teeth, or between artificial and the natural teeth; I do not believe that any one case can be produced which would prove this theory to be true. It is evident to every man, that when even the smallest particle of food gets between his teeth, he is uneasy until it is displaced, nor is the food ever reduced to an impalpable pulp in the mouth; to reduce which is the duty of the gastric juice in the stomach. Besides which, it is hardly possible for particles of food to remain in the mouth long enough to acquire chemical properties of a nature to destroy the teeth; because if the saliva did not wash these particles away, its own alkaline principles would oppose the tendency of food so situated to

become acid. But, if we search a little closer, we may perhaps find the true cause to exist in the buccal fluids only, which in abnormal conditions of the body, become vitiated and corrosive, and this condition is known to change sometimes more than once in twenty-four hours. Indeed, I do not know that I may not ere long be prepared to prove that the salivary admixture is always acidulated during sleep, but as I have not concluded my researches into that phenomenon, I shall not insist upon it at present.

In the number of the *Medical Times*, June 27th, 1855, I submitted to the editor another paper upon the cure of toothache, and the treatment of exposed nerves; in which I prove, by analogy, that the destruction of a tooth when encased in gold, is caused by the chemical action of the oral fluids; and I there hold, if I do not in terms express it, that these fluids always become destructive to the teeth, if they remain confined to any particular situation, for any length of time; clasps, no doubt, are certain destruction to any tooth they may be applied to, unless they be removed and cleaned three or four times a day of the acid matter of which they generally are the depository. These fluids act upon the enamel of the tooth, and before long it is found entirely eaten away; the same thing takes place when gold or bone clasps of artificial teeth encircle a living tooth, and the mucous deposit may be observed thickly deposited upon the inner surface of the clasp, only perceptible upon that portion which does not quite touch the tooth; that portion which does touch being bright and polished. It is also observable that that part of a tooth which is immediately in contact with the polished portion of the clasp, is never affected with decay, which is strong presumptive proof that the gold clasp must not be blamed, should the tooth it surrounds become destroyed by decay. The blame of course must rest with the wearer in not removing the deposit, which could be easily performed by a piece of pencil-stick enveloped in a small piece of rag. All soft and absorbent substances are very injurious when retained in contact with the sides of the teeth, such as all kinds of ivory, wood, gutta percha, India rubber, silk, &c., as we know that teeth are never destroyed by friction under those circumstances, but by chemical action. We know that a thin metallic wire will cut its way into a tooth; but we also know that it is not good dental practice to use it.

Forty or fifty years since, before gold was used either for frames or clasps, it was the usual practice to secure the artificial piece by drilling tubular holes in that part of the artificial piece which encircled the natural tooth, into which cilindrical pieces of hard wood were placed to press upon the tooth and act as a clasp. But this plan has been abandoned as a system for very many years, and is now made use of only as a makeshift probably to enable some old bone or gold piece to wear out some elongating tooth, which may have done duty as a holdfast; I think I may say without fear of contradiction, that the principal cause for this abandonment was, that it had been found "that each piece of wool wore a corresponding hole in the tooth it was in contact with." The expression "wear a hole," was at that time the most appropriate, it not then being known that the action was *chemical*. Nearly all diathepical variations have a corresponding effect upon the oral fluids, but it is when they are stringy and viscid that they become most destructive to the teeth, as at that time the saliva is loaded with mucous, with which it does not mix readily at the same time, and it becomes necessary, to use some attenuating mixture which will thin and nutralize its action. The saliva is often found to partake largely of this character during fevers, dyspepsia, as also during

the whole period of gestation; and frequently does not change until lactation begins. Many teeth are lost during this period, but the greatest number by persons in a humble station of life, where the refinements of cleanliness are not so strictly observed.

With the knowledge of the nature and cause of caries of the teeth, which is gradually manifesting itself to us, we may by research find a specific; so that in time, decayed teeth may, in some measure, become like some other diseases, a matter of history.

DISEASE OF THE MAXILLARY ANTRUM.

1.—*Inflammation and Suppuration of the Living Membrane of the left Antrum, arising from a Decayed Molar Tooth—Operation; Cure.*

By Mr. H. L. Jacob, M.R.C.S.

Miss ——, a lady of rather scrofulous temperament, applied to me at the end of February, 1854, in consequence of a pain in the left side of the upper jaw which she had felt more or less for several months, and supposed to proceed from the second molar tooth. In the previous autumn, while staying in London, she had applied for advice, and was told that the pain arose probably from the stump of the first molar adjoining, which was accordingly extracted, but without affording relief. On examination, I discovered extensive decay on the posterior aspect of the second molar, exposing the nerve; the adjoining dens sapientiæ was not affected. The tooth being extremely tender, and giving rise to a good deal of general irritation about that side of the face and head, I advised immediate extraction; this was, however, strongly objected to by the patient, who wished me to stop the tooth after destroying the nerve, as I had done in the case of another of her teeth some years previously. As I could not induce her to submit to the extraction, I thought it best to try palliatives for a time, and advised the daily application of the complicated tincture of mastic and aconite. About a fortnight elapsed before I saw the lady again, when, the tooth being still very tender, I again recommended extraction, but at the earnest request of the patient I at length consented to destroy the nerve, which I did by the application of the arsenical paste (arsenious acid and plaster of Paris). It seems that, the day previous to this, severe pain and *throbbing* had been felt in the tooth and *in the cheek*, but this was purposely concealed from me at the time. I deferred stopping the tooth on account of some little uneasiness still felt in it, and did not see the lady again for more than a month, during which time I heard once or twice that the pain in the tooth had ceased, but that there was a fetid discharge from it; to check this, I prescribed the use of astringents, but I learnt afterwards, on making further enquiries, that there was an offensive discharge from the nose; and on examining the patient, the nature of the case became apparent. I at once extracted the tooth, and as the symptoms were not then very severe,

I hoped that the evil would be remedied by the removal of the exciting cause; this, however, was not the case, the symptoms increased in intensity; pain and fulness were felt in the cheek, particularly towards evening, with a tolerably copious discharge of muco-purulent matter from the nose during the night, and a continual, though less abundant discharge during the day, except for an hour or two after rising. This is what might have been anticipated from the position of the orifice of the antrum, and the effect of posture in favouring or preventing the accumulation of the secretion, &c. Various remedies, such as leeches, blisters, embrocations, iodine, internally and externally, &c., having been tried without avail, I resolved on perforating the antrum without further delay; and accordingly, on the 8th of May, with the kind assistance of Mr. J. Parsons, I proceeded to operate. The patient being seated on a chair in a good light, with the head supported by an assistant, I made a V shaped incision through the mucous membrane, &c., covering the anterior wall of the antrum, dissected up the flap from the bone, and penetrated the latter with a trocar, just over the roots of the second bicuspid, and first molar (or rather the spot which they would have occupied, these teeth being lost); a plentiful flow of pus instantly took place. Having enlarged the aperture with a triangular-shaped instrument, having a truncated point, I injected a little warm water, which escaped freely, both through the wound and through the nose; a pledget of lint soaked in warm water was introduced into the wound, and the patient retired to bed, feeling much relieved by the operation. The subsequent treatment consisted of mild astringent injections administered at first three or four times a day, and gradually discontinued; the discharge, which after the day of the operation, never took place again through the nose, soon ceased altogether; the wound quickly healed without any untoward symptom, and in the course of a month the aperture was entirely closed. There has been no recurrence of the disease since.

Had I been made acquainted with all the circumstances in this case, at the time, I certainly should not have attempted to destroy the nerve, as this proceeding probably increased the irritation which was already set up; after the disease in the antrum had manifested itself, it might have been more speedily brought to a termination by perforating the floor of the cavity through the outer and anterior alveolus of the tooth, immediately after its extraction, but I did not do this for the reason stated above; as a general rule I prefer the operation through the anterior or outer wall, the bone here being thin and easily penetrated and allowing of a larger aperture than can be made through the alveolus.

2.—*Case of Spontaneous Cure of Incipient Disease of the left Antrum.*

The Rev. ——, a gentleman about sixty years of age, of pale complexion and thin spare habit, applied to me, in May, 1852, when I found the second molar on the left side of the upper jaw decayed on its posterior aspect, and the internal cavity exposed; pain had been felt in it, but had subsided, and a slight fetid discharge had taken place from it, which also appeared to have entirely ceased. The patient much wished me to stop the tooth, which I did, after warning him of the possible result. About a month afterwards, the jaw became painful and uneasy, with a sense of fulness in the cheek, and a slight fetid discharge took place from the nostril of the same side, this continued for a few days only; I saw him just after the symptoms had subsided, I pointed out to him the nature of

the case, and begged him to apply to me as soon as he felt any return of them; a twelvemonth afterwards, however, he informed me that the tooth had occasioned him no further inconvenience, and I have heard nothing of the case since.

3.—*Chronic irritation and morbid secretion of the lining Membrane of the Antra.*

N. B——, a young woman of strenuous diathesis, thin delicate skin and weak health, has lost the greater number of her upper teeth, the roots for the most part remaining in the gum, and keeping up more or less pain and irritation. She will not consent to their removal. She has been long subject to the secretion of offensive mucous or muco-purulent matter from the nose—thick, viscid, and copious; the breath also from the nostrils having the same offensive odour. There are no other symptoms in this case indicative of disease of the lining membrane of the antrum, but I think we may infer that there is a vitiated condition as well as increased quantity of the secretion of this part of the pituitary membrane, excited and kept up by the irritation of the decaying stumps of the teeth, under the floor of the antrum on each side, favoured, of course, by the particular state of the constitution.

4.—*Disorder of the Right Antrum, from the irritation of a Tooth apparently but slightly Diseased.*

Master L——, a lad about fourteen years of age, and healthy in other respects, suffered in July, 1855, and for a few months' previously, from some little pain and uneasiness in the right side of the upper jaw, with *fœtor of breath* from the *nostril of that side;* the only tooth at all decayed, was the right upper first molar, but the decay had not reached the nerve, nor was the tooth itself painful, unless struck rather strongly on its lower surface; there could be little doubt, however, as to this being the cause of the mischief, and I extracted it accordingly. On examination, a small elongated fibrous sac was found attached to one of the outer roots, and the other appeared as if an abscess had commenced around it. The symptoms disappeared soon after the extraction of the tooth.

This case is rather curious, inasmuch as neither the exciting cause, nor the severity of the symptoms, seem proportionate to the extent of the mischief, the decay in the tooth being so slight, and the principal inconvenience complained of being the fœtor of the breath. The fact of this fœtor being confined to the one nostril, was the principal diagnostic feature in the case.

THE ADAPTED FORCEPS.

By Mr. James Robinson.

No little discussion has, from time to time, taken place both in this country and America, as to who was the inventor of the improved forceps. Some of the disputants have asserted that they themselves were the inventors of the adapted instruments; while others have contended that these instruments were known, and in common use some sixty years back. Now, without at all attempting to settle this *vexatio quæstio*, I am disposed to hold that we owe much to Mr. Fay and Mr. P. Matthews,

members of our profession, who, strangely enough, introduced the adapted forceps, at the same time; neither being aware of the others improvement.

In the Transactions of the Society of Arts, vol. xliv., I find that Mr. Fay, having commented upon the imperfection of instruments then in use, goes on to say—

"I was soon convinced that the neck of the tooth was the only part on which the necessary force could be applied with the greatest safety and advantage. The teeth do not all present the same arrangements of parts: it follows that the figure of their neck must also vary. * * * There are certain teeth formed very much alike, both in the upper and lower jaw, and of the teeth thus similar to each other, there are various classes; but each class retains the same peculiarity of figure, in all ages and under all circumstances. * * * I have invented a set of instruments, accurately, because anatomically, suited to the several classes of teeth; a desideratum, as I believe, never before accomplished. These instruments are forceps corresponding in number to the different classes of teeth, and united to the same classes on the right side and on the left, in the upper and in the lower jaw, amounting to six in number; but as it is necessary to have two or three sizes of these, the number of extracting forceps is nine. * * * The advantages which I consider these forceps possess over all others are briefly these—First, they may be accurately applied to the necks of the several classes of teeth; they are made to fit the necks only, never making the least pressure on the enamel or body of the tooth; and consequently, may be used without any danger of breaking a careous tooth in the attempt to extract it. Secondly, they never can slip when once accurately applied on the necks of the teeth—a great practical benefit. Thirdly, no cutting of the gum, or any other prepararory measure, is necessary, as the edges of the blades of the forceps may be at once brought upon the necks of the teeth. Fourthly, a provision is made by the beaked form of the extremities of the blades of the forceps, designed for the extraction of teeth having more than one fang, by which means the forceps may be steadily fixed on the remains of a decayed tooth, even when the edges of such teeth are below the level of the gum."

Such is the description, and the following are drawings, as given by Mr. Fay, of his very important invention:—

I cannot agree with him in the mode of using his instruments, which he has explained; but I think we all owe him a debt of professional gratitude for his invention, and for the manner in which he directed the attention of the profession to the advantages of adapted forceps. Since he did so, very valuable improvements have been made in the adaptation of these instruments, as also in their manufacture. The late Mr. Shepard invented a forceps for the extraction of stumps, which also possesses great merit. Mr. Snell's improvement in the adaptation of the beaks of forceps to the upper and lower molar teeth, also deserves especial notice. This gentleman, it was, who suggested the curvature in a hook-like form of one of the handles. The object of this curve is to give the instrument such a hold on the little finger, as to prevent it from slipping whilst the operation is being performed.

In the construction of forceps, care should be taken that the surface of the blades are sufficiently expanded to grasp the neck of the tooth without pressure on the crown; and the forceps should be sufficiently large to afford the requisite purchase to the hand of the operator. For the removal of the temporary teeth, there should be six pairs, shorter in the handles and with smaller blades than those used for the permanent teeth. For the permanent teeth, twelve pairs are required; besides two pair of stump forceps, and two elevators. In addition to these, the pupil should be provided with a straight and a curved pair of bone forceps for the removal of splinters of the alveolar process.

This cut represent the forceps necessary for the extraction of the upper deciduous incisors. Only one pair of the above is necessary; but for the extraction of the temporary molars, two pair are indispensable—one right, and the other left side, as—

(*To be continued.*)

THE GROWTH OF TEETH IN CHILDREN.

The following is an extract from a work published in 1742, *by Joseph Hurlock, Surgeon, upon Dentition, or the Breeding of the Teeth in Children :—*

Of the casual sort, are likewise the following, though of lesser note, which may be termed external causes :—

1.—The immediate influence of the air, by means of the early decay of some more forward teeth.
2.—The too free use of hard bodies on the gums.
3.—An over heat of things offered to the mouth.
4.—Wounds of the gums.

It may now, perhaps, be thought more agreeable with rule and order, that I should in some instances, before I quit this head of causes, make good the charge laid against these contingencies, as disturbers of the dentition; but whereas nothing can tend more than such proofs as these to the settling a practical point of the last importance, about which men of the best note are not well agreed, for want of the evidence of just observation, I shall reserve these matters to be occasionally brought on in subservience to this great end, and enter upon my next general head, as introductory to all that relates to practice, which is—To take a view of the remedies proposed for the relief of the dentition griefs, and to examine their fitness for this purpose; anointing or rubbing the gums with the finger dipt in cream, fresh buttor, honey, yolk of egg, sugar alone or mixed; the brains of a hare, goat, calf, lamb, or a sucking pig; with the fat of fowls, or with fresh blood from a wounded cock's comb, and also bitch's milk; to let the infant bite upon a piece of wax candle, for relaxing the gums, and allaying their itching; often to rub the mouth and gums with a stick of liquorice, shaven, bruised, and dipped in honey or some cooling syrup; to anoint the gums with oils of sweet almonds, lilies, cammomiles, roses, and in case of great inflammation and intense pain, with the juices of lettuce and night-shade, as a narcotic; with other things too tedious to mention.

Outwardly, "Sennertus" foments the jaws with an emollient decoction of marshmallows, flowers of cammomile, and dill. "Parey" proposes a cataplasm of barley-meal, milk, oil of roses, and the yolks of eggs. And "Rhazes," according to "Primerose," washed the head with the decoction of cammomile, melilot, and dill, instilling oil hot into the ears, thereby resolving the humours descending upon the gums. To assist moreover the penetration of the teeth, the use of hard substances are recommended for infants to press or bite upon with their gums, for which purpose some have preferred the teeth of fierce brutes (the wolf in particular), before other things of this kind, believing that these while retained in the mouth, emit some effluvia very subtle and penetrating, by which the perforation of the gums may happen to be promoted. Necklaces were also directed to be worn as helps, made of the roots of henbane, peony, the wild gourd, and other vegetables, not to name some things in this way of management, which favour more of superstition than reason. These are the remedies which appear among the writings of the ancients, as the most current practice of their times, and the means of cure they much relied on; and I think their number and variety are standing proofs that they were not a little perplexed therein.

I was sent for, the latter end of December, by the Rev. Mr ——, to bleed his son of two years' and a quarter old, according to order. I found this child with a very quick pulse, uneasy in his breathing, and vexed with a cough, and this morning having had several thin stools; as my custom was within the proper ages of children, I inquired what teeth he had? but was answered by

somebody present (this being the original of my acquaintance with the family), they did not apprehend his illness to be from them, he having cut most of his teeth.

Having bled him to the full quantity ordered, viz., three ounces, I then examined his gums, and found them very much swelled between the two middle incisors, and the first molars of the upper jaw, which last were come out before the two side incisors. On his lower jaw he had six teeth out. I desired leave to open his gums; which being granted, I found the teeth I had made way for, advanced so forward, that I concluded he must have suffered much, if not principally, from hence. This was at night. I called next morning, and found him so bad that I told his father (upon asking my thoughts) I saw little room to flatter him—but believed his son would die, but was unwilling to speak so plain to the mother, who had an infant at her breast. He held out three days after my first visit, and thence departed this life, having laid long in the agonies of dying.

The person who had the care of him had blistered him, and given him several things, particularly on the last day (not apprehending he was so near death). Seeing the child breathe with difficulty, and often lay his hand on his breast, he, suspecting a pleuratic pain, ordered him again to be blooded to what quantity he could bear. I told the father, upon application for this purpose, I feared he could not bear the loss of more, having observed his first blood to be very thin and poor; however, it being much insisted on, I bled him again, but by the time he had lost about an ounce and half of blood, I found his arm grow so cold, and his pulse to flag so much, that I speedily untied the ligature, and put a stop to it. This was about three hours before he died. After this last bleeding, directions were given for oats to be fried, and applied to his side; and a liniment was sent in to be bathed on the part, with a pectoral bolus, &c., but death prevented the use of these remedies.

The next morning, after I had opened his gums, discoursing his mother about his illness, she told me that his upper lip had often swelled for near four months past, especially within the last week; that his eyes seemed tender, and that he would often pat his fingers against the upper part of his mouth. One of the times I called to see him before he died, I made an effort to feel his gums again, but perceiving he would not let me without some restraint, I forbore it, considering his distressed condition; but, being dead, I examined to my satisfaction, and found the four incisors and the two first molars of the lower jaw, with the two middle incisors, and two first molars of the upper jaw, seemed to have been out some time, being well advanced, but on this last jaw on the left side of the two middle incisors, I found an incisor but newly passed out, and on the right side of them the other incisor just appearing, and the edge of the eye-tooth (as usually called), plain to be felt by bearing the finger close to the incision I had made; the mother standing by at the time felt the same and said, they were not so before, for that she remembered some time before I first came she passed her finger on the child's mouth, but did not feel them.

I, hearing the searchers of the parish were now coming in, withdrew aside, desiring the father to let their opinion pass to the general account, but upon their declaring the child died of convulsions, he could not refrain, under the weight of his concern, but cried out audibly, "No, I am now convinced he died of teeth, by those that have been cut out in the time of his dying."

SOME OF THE EFFECTS PRODUCED BY CARIOUS TEETH.

[Delivered at the Leeds School of Medicine, Jan. 24th, 1857.]

By SAMUEL SMITH, Esq., F.R.C.S.,

Senior Surgeon to the Leeds General Infirmary, and Lecturer on Midwifery at the Leeds School of Medicine.

GENTLEMEN,—On the present occasion it is my intention to describe to you some of the effects produced by carious teeth, the causes of which are occasionally overlooked by practitioners; and I am induced to do this by the occurrence of a case which came under my observation on my last admission-day.

CASE 1.—Elizabeth H——, aged forty, was sent from some distance in the country to this Infirmary, Dec. 12th, 1856, to be treated for what she was told by a medical practitioner was a cancerous tumour in the cheek. On examination, a tumour, the size of a small chesnut, was found, with an ulceration of the mucous membrane, just fitting the sharp edge of one fang of a carious molar tooth of the lower jaw, which was making its way from the gum. Being fully assured, from former experience, of many cases of a similar kind, that this was the sole cause of the tumour and ulceration, I removed the tooth, and in your presence promised her it should be well in a few days. A little lotion was ordered for the mouth. She appeared again on the next out-patient day, Dec. 17th. The ulceration was healed, the tumour gone, and she was discharged cured.

Now, gentlemen, I tell you that if the cause of that tumour had been overlooked, no treatment of any kind would have been of the least use; it would have continued, it would have increased, and gone on from bad to worse for months, and possibly for years, unless the tooth had been removed by the efforts of Nature. I could tell you of scores of cases like the above; one more shall suffice.

CASE 2.—A gentleman from a distant town, where there is a large hospital, happened to have his leg broken in Leeds, and was in lodgings under my care. His wife came to attend upon him, and she consulted me about an ulcerated tumour in the cheek, which had existed a long time, and for which she had had the advice of several surgeons, and various applications used without advantage. I detected one fang of a carious molar of the lower jaw laid horizontally on the gum, but adherent and embedded in it, with the ragged point fitted into the centre of the tumour. I pushed it away with my pencil-case, and the tumour disappeared in a few days. Both these patients were under the impression that they were suffering from cancerous disease.

Sometimes, instead of the cheek, the tongue suffers from the same cause. I have detected many cases of this kind. One interesting example shall be sufficient to explain such cases to you.

CASE 3.—More than thirty years ago, one out-patient day, my senior colleague (Mr. Hey) informed me that a few days previously he had incised a malignant-looking tumour from the tongue of a young country-woman, who was a private patient of his; that, to his surprise, in a few days the tumour had sprouted out as large or larger than before the operation; that, as she was not in circumstances to pay consultation fees, he had requested her to be in the

house-surgeon's room at twelve o'clock, in order that he might ask Mr. Chorley's opinion, along with my own, on the case. On that day Mr. Chorley did not come to the Infirmary, and I went with Mr. Hey to see his patient. There was a foul, dark, fungoid tumour, which occasionally bled, and from which she suffered much pain during every attempt to speak or masticate food; it was the size of a small walnut. On examining it with the finger, I detected two broken incisors (the middle and left lateral of the lower jaw) leaning inwards, and with sharp-pointed edges fitting into the centre of the tumour. I was immediately convinced that these two teeth were the cause of all the mischief, and stated that opinion to Mr. Hey, who appeared doubtful. I said that he would not be justified in applying the ligature, or using any other means, without first waiting to see the effect of the removal of the two broken carious teeth. I never saw the young woman again, but I was informed by Mr. Richard Hey that the teeth were drawn, and soon afterwards the tumour entirely disappeared, without any other means being resorted to.

Sometimes carious teeth produce abscesses in the cheek, neck, and throat; these burst or are opened, and form fistulous sores, which will remain unhealed for months and years unless the cause be removed, just in the same manner as you see fistulous openings in the leg in cases of necrosis, and which remain open for years until the sequestrum is removed.

Case 4.—Soon after I commenced practice, I frequently met a young gentleman of fortune walking about with a piece of black plaster on the left cheek, as large as a dollar. I often wondered what could be the matter, but not being his attendant I had no business to enquire. After suffering the annoyance of his black plaster for a very long time, and being in London, a friend persuaded him to consult Sir Astley Cooper. He made very short work with him, took his fee, and sent him to a dentist to have a certain upper molar tooth removed, informing him that he would be well in a few days after. His prognosis was verified by the result. This young gentleman is now an old one, and I occasionally meet him; he has never worn his black plaster since, but he has the appearance of a Peninsular veteran who had a musket-ball in the left cheek.

Case 5.—A few years ago a middle-aged man, residing in the south, and who travels every year with surgical instruments on sale, after transacting business with me, asked my opinion about a fistulous sore which opened on the middle of his whiskers on the right cheek. I introduced a probe, and came in contract with a fang of the last molar tooth of the upper jaw. I persuaded him to allow me to draw it, on the promise that he should be well in a few days. I requested him to write by post on the tenth day, and let me know the result. He wrote to say the discharge ceased the day the tooth was drawn, and that it was perfectly well. Now, here was the case of a person in constant communication with surgeons, selling them daily caoutchouc instruments of his own manufacture. He had suffered for a long period, had often advice, but had never had the true nature of his disease pointed out to him.

Case 6.—Seven or ten years ago a young women came under my care at the infirmary, with a fistulous sore in the fore part of the throat, within an inch of the sternum. It had been discharging upwards of a year. I probed it; the instrument could be passed in the direction of the molar of the lower jaw on the left side. On inquiry, she said that eighteen months before she had had a tooth drawn at the dispensary, but the fangs of the tooth were left in the jaw. Afterwards an abscess formed, which descended lower and lower till it burst midway between the sternum and pomum Adami. I drew the stumps; it still discharged for a week or ten days, when it got well without any other treatment. I mention the above case to impress on your minds the possibility of the fistulous orifice being at a considerable distance from the offending tooth. The fistulous sores proceeding from carious teeth are generally on the cheek or at the angles of the jaw. On the application of the probe you will often find the instrument pass readily to the interior of the mouth; you have then only to select the proper victim for sacrifice, and you will rarely err in this respect. Where the sinus from the sore to the tooth is short, the discharge from the external sore will generally cease in a day or two after the extraction of the tooth, but where it is long, as in the above case, it may be a week or two.

There is an excellent old adage—"Prevention is better than cure." This applies well to surgery, and especially to such cases as we are alluding to; for as abscess in these cases always precedes the formation of a fistulous sore, it should be your endeavour to detect these cases at this particular period. I find that several cases of this kind come under my observation every year; the last, during the present month.

Case 7.—Thomas K——, an Irishman, aged fifty, was admitted as an out-patient on the 2nd of January. His case is set down as abscess in the cheek. The jaw was closed; he could not open his mouth. He came again on the 7th, no better; and it was not till the 14th that I detected the true nature of the case. I examined the mouth, and found two detached fangs of a molar of the lower jaw carious and loose; he could not open the mouth sufficiently for the introduction of forceps, but I pushed them out with a punch.

Jan. 21st.—He says he could open his mouth comfortably the following day; the swelling had gradually subsided, and he was discharged, cured.

Case 8.—A long time ago, a near relative consulted me about an abscess at the angle of the jaw, on the right side. I suspected its cause, for on pressure I could make pus appear at the edge of one of the molars. He refused to have the tooth drawn until I assured him that the abscess would burst externally, and continue discharging till the tooth was removed, and that an ugly scrofulous-looking cicatrix would remain for life. The tooth was drawn; the abscess discharged itself into the mouth, was soon well, and left no mark.

Now, in both these cases, if the cause had not been detected when it was, in ten or twelve days the abscess would have burst externally, and a fistulous sore would have been the consequence, which would have continued discharging until the teeth had been removed either by nature or art. I have seen scores of such cases. Whenever you extract a tooth in these cases, always examine it carefully; you will invariable find the fang deprived of its periosteum, and sometimes a little sac attached to its root, containing pus.

Sometimes, where an abscess forms from a carious molar of the upper jaw, the matter, instead of making its way to the cheek, gets into the antrum. I have seen several cases of this kind, and have at present a private patient under treatment. Remove the tooth, and if this does not give a sufficient outlet for the matter, perforate the antrum with a joiner's gimblet. There has been a very interesting case of this kind recorded in the journals during the present month.

Case 9.—A horse was condemned to the knacker's yard as being afflicted with glanders, having a foul offensive discharge of purulent matter from the nostrils, and being in the last state of emaciation. A veterinary surgeon, finding it could not masticate its food, examined its mouth, and detecting a carious tooth in its upper jaw, extracted it. The discharge ceased, the horse soon began to thrive, and got well. Here was a case in which there was as much professional credit due to the surgeon, as if, instead of saving a horse from the knacker's yard, he had saved the life of an alderman. I was speaking yesterday on the subject to my friend Mr. Louis Oxley, the dentist, and he related to me a case of such interest, that I requested him to write it out for me. Here you have it in his own words:—

Case 10.—"A young woman, of rather strumous habit, complained of a dull, aching pain under the orbit. The pain lasted from three to four months, attended by a gradual elevation of the orbital surface of the maxillary. The eye above this surface became at length so affected as entirely to lose its functions. At this stage of the case the young woman, who was attended by a general practitioner, who ignored dental surgery and pathology, resorted to leeches, blisters behind the ears, and drastic purges: I need not say ineffectually. After two or three months' loss of the sight, the young woman first perceived a discharge from the right nasal fossa of a thick purulent fluid. This discharge had existed for eighteen months when I first saw her, *even in spite of the aforesaid remedies!* An examination of the mouth at once revealed the cause of so much misery, and the removal of three roots in a state of periostitis was the simple means by which two most important organs regained their proper functions.

"There is another case in which swelling, inflammation, and ulceration at the sides of the tongue take place, and which does not appear, so far as my experience goes, excepting in individuals approaching to or upwards of sixty years of age; but I have seen several cases of it, and shall proceed to describe the cause. If you will examine the form of the molars of the lower jaw where they come in contact with the sides of the tongue, you will find the line from the neck to the top of the crown gives a convex outline, so that for thirty or forty years, during the act of speaking or mastication, the sides of the tongue come in contact with the smooth rounded surface; but the constant grinding of hard food, such as biscuits, &c., for two score years, where all the teeth have remained sound, wears away one-third of the upper part of the teeth, the bony part is worn away deaper by one-eighth of an inch than the enamel, leaving a sharb edge projecting into the mouth, so sharp that, by firmly pressing the finger and drawing it along the edge, you might cut it to the bone. The friction of the tongue against this shard edge produces the effect I have described. It is only necessary to round off the edges by the use of a fine file, and the tongue will soon heal. The operation will require to be repeated in a few years.

"Now, gentlemen, I conclude most of you intend to practise the three branches of the medical profession, or to become what is called general practitioners. The study of the anatomy and physiology of teeth is in general too much neglected; it is a most interesting subject, and surgeons often make serious mistakes who are ignorant of it. There are those who take a pride in confessing their ignorance of some parts of their profession—midwifery and dentistry, for instance. I hope you can all with me feel a sincere pity for such."

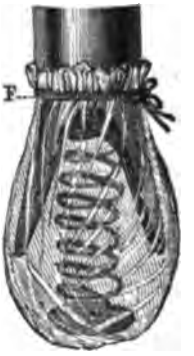
Case 11.—Many years ago, a patient of mine went with her family to a fashionable watering-place. One of her children, nearly four years of age, was taken ill, and a surgeon of some eminence was called in, who attributed its illness to teething, and lanced its gums. Now, he ought to have known the child had cut all its first set of teeth nearly two years previously, and, as I hope you all know, that it would be at least three years before another tooth would be ready to perforate the gums. These are the sort of errors you will commit, if you remain ignorant of this subject when you are in practice.—*Lancet.*

INSTRUCTIONS FOR PRODUCING LOCAL ANÆSTHESIA.

The employment of cold, as an anæsthetic agent, is every day rendering services to surgery. It is peculiarly applicable where the operation is very painful, but at the same time of short duration, such as cauterisation by a red hot iron (query, actual cautery), the avulsion of a toe nail, &c. As the extraction of a tooth is an operation where these conditions exist, it is very desirable we should be able to use this agent.

We proceed to describe a mode of applying cold to the gums, that our New York correspondent, Dr. A. Preterre, informs us has produced in his hands very good effects. This method is that of Dr. C. S. Putnam. It consists in deadening the sensibility of the part to be operated on by a freezing mixture.

The instrument is composed of a tube of gutta percha, 4½ inches long, and 1 inch in diameter, closed at its superior extremity by a cover, and open at its inferior extremity. This extremity is divided into two deep lips of iron, of a horse-shoe shape, the length of a diameter and a half of the tube; the edges of the lips are rounded.



This inferior opening is that in using the instrument by a membraneous purse, sufficiently large to fold back between the two lips. This membraneous purse is fixed to the cylinder by a cord F. When the instrument is to be used, fill it quickly to half or two-thirds of its length with a freezing mixture, formed of two parts powdered ice and one of marine salt. Place above this the little disc, which by means of a spiral spring, one end of which is fixed, the cover presses on the freezing mixture, a little above the part on which the instrument is applied. In applying it, you place the end of the instrument on the tooth to be extracted and its neighbouring parts, so that the two terminal lips embrace the interior and exterior surface of the gums, nearly to its base, and that the tooth to be extracted is in the axis of the tube, and surrounded with the gum by the refrigerating mixture, from which it is only separated by the membraneous purse E; one to three minutes is sufficient to render the gum white, this indicates the time to operate. The instrument we have been describing, is used to extract teeth in the anterior part of the dental arch. For the teeth situated behind the small molars it is necessary to use another tube, which has only one lip, and which we can apply in an inclined position. Each instrument has on its valve a little tube for the passage of air. To extract roots deeply situated and deprived of life, Dr. Putnam advises to insert in them a little metallic pin, which serves as a conductor, and makes the operation more easy. He treats teeth, where the nerves are exposed, with a preparation of arsenic, and does not extract them till the following day. The adjacent teeth, which are sensitive, ought to be covered with gutta percha or wax to protect them.

A good method of preparing the ice is to break up a piece on a wooden block. The ice ought to be transparent and free from air bubbles, and should be wiped before being mixed with the salt and introduced into the bag. Besides the mixture we have mentioned, and which produced a temperature equal to the Zero Fahrenheit, other refrigerating mixtures are known; but this is the most useful, and a more intense cold would be dangerous. Dr. Preterre says, that this method has produced, in his hands, an anæsthesia most satisfactory, when applied to roots and teeth deprived of their nerves, but the application is sometimes very painful when the tooth has its vitality still existing.—*L'Art Dentaire.*

Chemistry.

To the Editor of the *Quarterly Journal of Dental Science*.

Sir,—Will you kindly permit me, through the medium of your columns, to introduce to the notice of the profession a preparation of gutta percha for stopping teeth, which will, I think, be found very useful by others as it has been by me, not merely as a temporary, but as a permanent stopping in certain cases? A number of gutta percha cements have been brought forward from time to time, but all that I had ever seen were objectionable in point of colour, consistence, or chemical composition. I was induced, therefore, to make a series of experiments to ascertain if a preparation of gutta percha could be produced which would be free from such objections, and at length succeeded in preparing a compound of purified gutta percha and *pure silica*, of a *creamy whiteness*, *hard*, as well as *tough*, and of course quite unchangeable in the mouth. Great care and nicety are required in the preparation of the ingredients; the silica which is ordinarily met with at the chemical shops is quite useless for the purpose,—and to obtain the gutta percha sufficiently free from colour is rather a troublesome process. The silica which I use is precipitated in a light bulky state from the silicate of potash or soda (the preparation of which I need not describe, as an account of it may be seen in any treatise on chemistry); and after being well washed and dried, with proper precautions against the access of dust or other accidental impurities, is exposed to a red heat (in a crucible with a cover well luted on) for about half an hour, and when cold is ready for use: care must be taken not to raise the heat too high, or the silica will shrink up to a much smaller bulk and become semi-crystalline and gritty, in which state it does not answer nearly as well. If the operations have been properly conducted it is of a perfectly pure opaque white colour, entirely free from grittiness and extremely light, dispersing in clouds at the slightest puff of air.

To purify the gutta percha, I adopt the following process:—a piece of native gutta percha is pulled to pieces in hot water again and again, until the greater part of the impurities are separated, and the water comes away colourless; it is afterwards dissolved in chloroform, when if the colouring matter does not readily separate from the solution on standing, a little water is added, and the whole well shaken together; the water causes a separation of a portion of the gutta percha in a flocculent state, which rises to the top, carrying with it the colouring matter. After standing for some time the clear solution may be drawn off. By means of a simple apparatus the chloroform may be distilled off and kept for use again, and the gutta percha which is left behind, after immersion for a short time in boiling water to drive off the last remains of the chloroform, may be rolled out on an earthenware slab into a sheet, which is a convenient form to keep it in. The silica and gutta percha are thoroughly incorporated together in a hot Wedgewood mortar as quickly as possible (an excess of heat being at the same time avoided, or the gutta percha will be partly decomposed and discoloured), as much silica being used as the gutta percha will readily take up at a temperature but little above that of boiling water,—one part by weight of silica will require from two to three parts of gutta percha, this last substance varying a good deal in hardness and tenacity; the exact proportions should be ascertained by experiment when any fresh sample of ingredients is used.

There are sundry little details connected with the various processes that I cannot well describe in writing without being very diffuse, and my object now is to give a general sketch rather than an elaborate description.

As the preparation of this cement involves a good deal of time, trouble, and expense—not to mention the chances of many failures at first—it is probable that few dentists will feel disposed to attempt to make it themselves; but I shall be happy to supply any of my brother practitioners with some of it, should they be inclined to give it a trial. In using it the cavity should be pre-

pared as for gold stopping, the cement slightly warmed before being introduced, and well packed in with hot instruments, care being taken to exclude all moisture, and to finish off well round the edges; it is best not to use more than will suffice to fill the cavity; if the first piece should not be quite sufficient it will be very easy to add a further portion, whereas any superfluous quantity will only hamper you in your manipulations. A similar compound, with a smaller proportion of silica, and the addition of a little colouring matter, serves for artificial gum; I use it occasionally as a coating for bone pieces to protect them from the chemical action of the mouth, and give them a more natural appearance.

Specimens of these preparations may be seen at the Museum of the College of Dentists, by application to the Curator, C. J. Fox, Esq., 27, Mortimer-street, Cavendish-square.

I remain, Sir,

Your obedient Servant,

Bridgewater, Feb. 1857. HENRY LANG JACOB, M.R.C.S.

AMYLENE; THE NEW ANÆSTHETIC AGENT.

We extract the following interesting paper from the *Pharmaceutical Journal*:

Dr. Snow has lately brought into notice "Amylene" as an anæsthetic agent, and numerous trials of this substance for producing insensibility are now being made. In the paper alluded to, Dr. Snow briefly traces the history of the introduction of anæsthetics. He gives the following quotation from Sir Humphrey Davy's *Researches concerning Nitrous Oxide*, published in the first year of this century. "As Nitrous Oxide in its extensive operation seems capable of destroying physical pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place." About forty years after the publication of this sentence, nitrous oxide was used with doubtful success by Mr. Wells, a dentist, of Hartford, Connecticut, in some cases of tooth extraction; but its use was speedily relinquished, the effect being considered uncertain. In September, 1846, Dr. Morton, who had previously been in partnership with Mr. Wells, and had witnessed the trials with nitrous oxide, administered the vapour of sulphuric ether with success in a case of tooth drawing, and afterwards in surgical operations. This led to the general use of ether vapour.* In 1847, Mr. Jacob Bell substituted the substance known as chloric ether for sulphuric ether, and this, although not sufficiently active, was found to produce insensibility. In the autumn of 1847, Mr. Waldie, of Liverpool, being in Edinburgh, explained to Dr. Simpson, that the so-called chloric ether was a solution of chloroform in spirit, whereupon the latter obtained some pure chloroform and administered it with great success. Dr. Snow states, "Ever since the introduction of chloroform, I have been of opinion that other agents would be met with, more eligible for causing anæsthesia by inhalation. It seemed improbable that this one, which happened to be standing on the shelf of the pharmaceutical chemist for another purpose, should be better than all the very numerous volatile compounds which organic chemistry is daily bringing to light; and the continued use of chloroform is probably due to the circumstance that hardly any one has made anæsthesia, by inhalation a subject of constant and protracted investigation. I have, from time to time, made experiments on animals with a variety of substances, and I find that the agents which might be inhaled for the prevention of pain in the absence of others which are more eligible are extremely numerous. They include, among other things, carbonic acid and carbonic oxide gases, olefiant

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* Mr. Robinson first introduced the vapour of ether as an anæsthetic into this country.

gas, the vapour of hydrocyanic acid, and cyanogen gas; which last is contained as I found in the fumes of the puff-ball which Dr. Richardson brought before the notice of the Pharmaceutical Society. The agents which I have exhibited as anæsthetics to the human subject in addition to ether and chloroform, have as yet been but few. They are nitric ether, Dutch liquid, benzoin or benzoyle, a bichloride of carbon, made by decomposing chloroform with chlorine gas, the monochlorinetted chloride of ethyle, and amylene, the subject of this paper. Nitric ether was exhibited also by Dr. Simpson, and Dutch liquid by him and Dr. Nunneley. These substances possess no advantage over chloroform unless it be in their slower action, while in other respects they are scarcely so agreeable. With regard to benzoin, I discontinued the use of it on account of convulsive tremors which it occasioned in a case of amputation in St. George's Hospital. I found that these tremors are a constant result when its effects reach a certain stage. I administered the chlorinetted muriatic ether in twenty surgical operations in the summer of 1851, chiefly in King's College Hospital. Its sensible and physical properties and its effects are nearly the same as those of chloroform, but I thought that it might possess some advantage in the circumstance that being less volatile, while its other properties are the same, it would be less liable to cause accident even if incautiously used. I was, however, prevented from using it further, owing to the great difficulty of procuring it in a state of purity." He further states—"I was not aware of the existence of amylene till a few months ago, or I should have tried it sooner; for I made inquiry, in 1848, for a substance named eupion, by Reichenbach, its discoverer, but was unable to obtain it. Eupion is a carbo-hydrogen, described as having all the physical characters which belong to amylene, though obtained in a different way, and I believe it is the same substance. Reichenbach obtained it from coal-tar, but other chemists have not been able to make it."

Dr. Snow describes several cases in which he has administered amylene, and says—"The relative advantages and disadvantages of amylene may, as nearly as I can judge, be summed up as follows. In regard to its odour it is more objectionable than chloroform, but much less so than sulphuric ether. The odour of any volatile substance is however no longer perceived after a patient begins to inhale. In respect to its pungency, it has a great advantage over both ether and chloroform, being much less pungent than either of them. Thus, whilst the patient, especially if a female, often complains of a choking feeling and want of breath in commencing to inhale chloroform, and two or three minutes are lost before the vapour can be inhaled in any useful quantity, she can begin to inhale the amylene of full strength within half a minute from commencing, and the operation may generally be begun within three minutes. In the amount which suffices to produce insensibility, it is intermediate between chloroform and ether, chloroform having the advantage. Amylene has an advantage in preventing pain with a less profound stupor than that occasioned by the other agents, and in the ready waking and recovery of the patient it has an advantage over chloroform, and a still greater advantage over ether. Its probable safety I have spoken of; and the greatest advantage of all, if it should continue to be met with in all cases, is the absence of sickness from its use. The almost entire absence of struggling and rigidity may be mentioned as an advantage of amylene over ether and chloroform."

Preparation and Properties of Amylene.—Amylene was discovered and described, in 1844, by M. Balard, of Paris. It is made by distilling fusel oil or amylic alcohol (the oily liquid which is separated from spirit of wine in the process of rectification) with chloride of zinc. On adding the fusel oil to a concentrated solution of chloride of zinc while they are cold, solution or admixture does not take place; but on applying heat, they mix and form a homogeneous liquid which begins to distil at a temperature of about 266° Fah. On re-distilling the product thus obtained, the ebullition which commences at 140° Fah. rises during the process to about 570° Fah. The most volatile parts of this distillation are to be separated and agitated with concentrated sulphuric acid, when the amylene in a pure state will rise to the surface. It is colourless, very mobile, and has a low specific gravity (stated by Dr. Snow to be 0·659 at 56° Fah.) Its boiling point is 102° Fah., and the density of its vapour

is 2·45. It has a peculiar and disagreeable smell. Its composition is represented by the formula C10 H10. It is soluble in alcohol and ether in all proportions, but is very sparingly soluble in water. Specimens prepared by different manufacturers have been found to present some difference in their sensible characters, which probably arises from the circumstances that the fusel oil from which it is made is not a definite body of uniform composition, and that the amylic alcohol, the principal constituent of the crude fusel oil, is not easily isolated in a state of purity. Should it be found that amylene cannot be always obtained in an uniform state, this will be a serious obstacle to its successful employment as an anæsthetic agent.

PREPARATION OF THE RED COLOURING MATTER FROM MADDER.

By E. Schwarz.

For the separation of the pure red colouring matter of madder (alizarine) from resin, the author spreads the triturated extract of the madder-root in thin layers upon filtering paper, and lays the whole upon a thin iron plate furnished with a handle, so that it may be at pleasure brought near to or removed from a pan of red-hot charcoal. The paper serves to regulate the heat, as it must remain uninjured during the operation.

The mass soon becomes fluid, and then separates into two very different parts: one of these penetrates the paper in the form of a dark brown substance, and at the same time the other covers the paper as a down of reddish-yellow needles, which may be easily removed when cold.

The heat must be regulated so that only a slight white vapour is evolved from the fusing extract, and not a reddish one, for in the latter case the sublimed product will gradually disappear.

The crystals obtained by this process are completely purified from the brown resin, for if they be triturated and again sublimed in the same way, they leave no coloured trace upon the paper. These crystals are slightly soluble in hot water, but readily in alcohol, æther, caustic alkalies, the oils, and concentrated sulphuric acid; they therefore behave exactly like the resins with these agents.

From the results given by this sublimed product in dyeing, it may be regarded as the red colouring matter of madder in a state of the greatest purity. This is also proved by its constant colouring power.

As, however, this substance is only diffused in water with great difficulty, it must be first of all dissolved in a very little boiling alcohol, and this solution diluted with a sufficient quantity of water. In this way a milky bath is obtained, which readily parts with all its colouring matter to mordants.

The brown resin remaining in the paper retains a considerable quantity of the red colouring matter, but the colours which it produces in dyeing are duller and more yellowish than those furnished by the extract of madder from which it is derived.

The brown extract which accompanies the red colouring matter may also be got rid of from the alcoholic extract of madder. The colouring matter dissolves more readily than the resin in boiling water, containing alum. Ten grms. of alcoholic extract of madder were boiled for half-an-hour in 1 hectolitre of water free from lime: the next day the coloured water, at the bottom of which light rose-coloured flakes were swimming, was decanted. This operation was repeated fifteen times. The brown residue of this treatment only contains very little of the red colouring matter. From this it follows, therefore,—

1. That the red colouring matter of madder is obtained in the purest state when an alcoholic extract of madder, possessing thirty-five times the colouring power of the root, is sublimed upon paper.

2. That the brown resin may be separated from an alcoholic extract of madder, by frequent treatment with boiling water in which a little alum is dissolved.

3. That the brown resin with which the colouring matter is combined in the madder, retains a portion of the colouring matter after dyeing with madder, and thus contributes to loss.—Dingler's *Polytechnic Journal.*

ON THE ACTION OF SOME REAGENTS UPON ALUMINIUM IN THE DRY WAY.

By C. and A. Tissier.

Aluminium is capable of becoming oxidized at a high temperature, such as that of welding iron, but the oxidation is limited by the thin stratum of alumina which forms on the surface of the metal.

Aluminium decomposes the oxides of copper and lead with explosion; it only partially decomposes oxide of iron in such a manner that it may form an alloy of equal equivalents with that metal; it has no action on the oxides of zinc and manganese.

Aluminium heated in fused nitrate of potash burns with deflagration, accompanied by a fine blue light. This is also the case with sulphate of potash or soda, with which it produces a strong detonation.

The action of carbonate of potash, although less energetic than that of the preceding, is still sufficiently so to oxidize the metal rapidly, with deposition of carbon. The alkaline silicates and borates, including glass and borax, attack the metal, with deposition of boron and silicium. The latter, although it surrounds the metal as it is oxidized, does not appear to combine with it under these circumstances, for the metal which remains has lost none of its malleability.

Chloride of sodium, and fluoride of calcium (especially the latter), constitute the best fluxes for the new metal.—*Comptes Rendus, Chemical Gazette.*

Chloroform.—Dr. James Arnott, in a recently published letter on the amount of mortality from chloroform, remarks:—"The most important question in connexion with the subject of sudden death from chloroform is, whether we are not justified in using it notwithstanding such accidents, on account of the saving of life upon the whole, in consequence of the supposed beneficial influence of chloroform on the results of operations. I believe that the statistics which I have recently published, have definitely answered this question. I have brought better proof than can be brought in support of half our universally received medical opinions, that, instead of there being a saving, there has been an enormous loss of life from the influence of chloroform on operations. Three months have elapsed since this exposition was made, and up to this time not a single fact has been brought in contradiction to it. The same gentleman who has furnished the catalogue of sudden deaths above commented upon, has very recently published a return of the deaths from amputation under chloroform at St. George's Hospital, which, instead of opposing, as strongly confirms my views as any such limited document can do. His average mortality of 29.9 must be increased, as he has included the amputations of the forearm, which have been excluded in the other comparative lists; and his preference of other statements of average mortality before the use of chloroform since cannot be allowed. One of Mr. Phillips' averages was founded on data rejected by the Council of the Medico-Chirurgical Society, and the other makes the mortality from amputation of the arm greater than that of the thigh!"

QUINIDINE.—Dr. De Vry, of Rotterdam, who has for a considerable time been occupied in the investigation of *cinchona alkaloids*, in an interesting paper recently contributed to the *Pharmaceutical Journal* states that there is one property of *quinidine* by which it differs widely from the other three *cinchona alkaloids*, and that the knowledge of this property may be useful for the successful separation of *quinidine* from its cognate alkaloids. Quinidine forms with hydriodic acid, a salt not easily soluble. One part of *neutral* hydriodate of *quinidine* requires 1250 parts of water at 60° Fah. for its solution. The *acid* hydriodate is much more soluble, for one part is dissolved by 90 parts of water at 60° Fah. By this difficult solubility of its neutral hydriodate, the presence of *quinidine* can be easily detected. Although the sulphate of *quinidine* is sparingly soluble in cold water, the solution is nevertheless strongly precipitated by a solution of iodine of potassium. The doctor adds, that he has no doubt that the manufacturers of *quinine* will be able, by using this reaction, to find *quinidine* in many specimens of the so-called *quinoidine* or *amorphous quinine*, or at least, in the mother-liquors, obtained in the preparation of the sulphate of quinine.

PRODUCTION OF STEARINE AND OLEINE.—Mr. Hills has obtained a patent for improvements in the production of these substances. His method (reports Dr. B. H. Paul) consists in mixing the fat, heated to 110° Fah., with 10 per cent. dry sulphate of lime, chloride of calcium, or other suitable substance capable of absorbing water; then adding 5 per cent. hydrochloric or nitric acid, and stirring the whole together for an hour; water is then added, and heated by means of steam to the boiling point, until the acid is entirely separated from the fat, when it is run off and melted to separate water, and pressed to separate oleine. A stream of hydrochloric acid gas, or nitric acid vapour, may be used, instead of the liquid acids and sulphate of lime or chloride of calcium.—Abridged from the *Pharmaceutical Journal*.

College of Dentists in England.

INAUGURAL MEETING.

THIS highly important event—the Inaugural Meeting of the Members of the College—took place on the 14th of February; and we do not exaggerate when we say that the proceedings passed off with an *eclat* that even those who best knew the great interest taken in the opening of the College by the great body of the profession, could not have anticipated. The invitations were by cards, sent out in the name of the President, Vice-President, and Council, and signed by the three Secretaries. The heads of the College were, very properly, liberal in the distribution of their invitations. They did not confine them to the supporters of the Institution, but sent them out widely amongst the profession, not forgetting the members of the Odontological Society. In its desire to have all its proceedings open and above board, it was thought advisable by the Council to invite the members of the Odontological Society, through the President and Committe of that Society; and, accordingly, a sufficient number of cards were forwarded to the President by the Council of the College. It, however, appears from a correspondence, which will be found in page 39, that

Mr. Cartwright returned the invitations; and we have reason to believe that he did so without consulting his Council on the subject. We shall not here enter into that matter, which is more properly one for the Odontological Society itself; but we were happy to observe, from the number of members of that Society present at this Meeting, that if it was intended, by the return of the cards, to keep them away from the inauguration, that object was not achieved.

The meeting took place in the great apartment of the Hanover Square Rooms; all the available space in which was filled by members of the College and visitors long before 8 o'clock, the hour at which the President took the chair. Round the splendid room, which was brilliantly lighted for the occasion, were tables on which were ranged glass-cases, containing interesting specimens of dental phenomena, artificial teeth, operating instruments, &c. &c. At the close of our report, we give a list of the principal matters of exhibition. They were viewed with great interest by the profession; and we are happy to add, that several of them have been presented to the Museum of the College.

Amongst the members and visitors present were—Somerset Tibbs, V. P., Cheltenham; P. Mathews, Treasurer; Smith, J. B., M.P.; Newton, Sir W. J.; Ridge, — M.D.; Carpenter, — M.D.; Croft, C. P. M.D.; Elliotson, — M.D.; McLaurin, — M.D.; Duncan, — M.D.; O'Connor, M.D.; Van Oven, M.D.; A. W. Clarke, M.D.; Davis, Hall, M.D.; McWhinnie, — M.D.; Macdonald, — M.D.; Steggall, — M.D.; Whidborne, Geo. M.D.; Girdwood, — M.D.; Brown, H. M.D.; Ashwell, Samuel, M.D.; De Meric, — M.D.; Hare, — M.D.; Beck, — M.D.; Spurgin, — M.D.; Reid, — M.D.; Tyerman, — M.D.; Pain, — M.D.; Humpage, J., F.R.C.S.; Strange, — F.R.C.S.; Simpson, G., F.R.C.S.; Wade, R., F.R.C.S.; Walton, Haynes, F.R.C.S.; Statham, S. F., F.R.C.S.; Gladstone, Dr. F.R.S.; Gant, — F.R C.S.; Hepburn, R.; Hunt, R. (Yoevil); Mackenzie, D.; Rymer, J.; Hill, A.; Clarke, J. Pattison; Underwood, T.; Mitchell, J. W.; Thompson, —; Hogg, Jabez, M.R.C.S.; Lance, G.; Spencer, H. L.; Brown, —; Vasey, C.; Sass, F. A.; Henderson, —; Finzi, —; Fox, C. J.; Mallens, W.; Kempton, —; Watts, —; Cooper, —; Bate, — (Brighton); Salton, W.; Kirby, H. J.; Howkins, Thos.; Lintott, W.; Bartlett, —; Buist, Robert, Jun.; Fox, — (Brighton); Faulkner, —; King, Norman (Exeter); Wright, H.; Bunting, —; Parkes, W. J.; Verrier, —; Painter, —; Chaldecott, — M.R.C.S.; Bullock, —; Luxmoore, —; Paulini, —; Harris, H.; Harris, R.; Stoddart, —; Merryweather, J. M.R.C.S.; Smale, —; Davenport, —; Thompson, H.; Ghrimes, S.; Jamieson, —; Wood, John (Brighton); Morson, J.; Morson, J. Jun.; Campbell, A.; Walker, G.; Clendinning, —; Canton, W. L.; Imrie, Wm. Jun.; Gelletly, —; Bell, —; Turner, —; Clarke, Alex.; Clarke, S. E.; Bradshaw, —; Clarke, —; Plank, —; Rew, —; Thompson, R.; Jones, —; Heath, R.; Berdmore, Capt.; Jordan, —; Walker, —; Elliot, —; Archer, J. Wykeham; Landseer, Charles; Bell, Jacob; Stock, —; Banguiet, Professor; Lloyd, Geo. F.; Nisbet, —; Bucklee, —; Ward, —; Imrie, W.; Smith, —; Smith, John A.; Hewards, —; Gamson, —; Robins, — M.R.C.S.; Cull, R.; Williams, John; Snow, Septimus; Girdwood, Prout; Jones, A.; Squibbs, G. M.R.C.S.; Wells, — M.R.C.S.; Baynton, A. Jun.; Gregson, —; Holt, —; Rymer, S. L.; Smith, —; Wright, —; Ash, Serjeant; Stuck, John; Stone, N.; Winterbottom, Edwin J.; Bayntun, A.; Bartlett, W.; Jameson, —; Mitchell, —; Bartlett, —; Robertson, —; Robertson, W.; Prothero, —; Hockley, —; Hepburn, D.; White, Thomas C.; Wright, J.; Harrison, —; Chambers, D.; Burt, —; Connacher, —; Connacher, D. I.; Rahnn, —; Ingram, —; McGregor, A. N.; Smith, —; Henry, G. Jun.; McChristie, W.; Hockley, —; Burke, J.; Carke J. F.; Bennett, Wm.; Mawbey, Alfd.; Sanders, —; Lloyd, E. A.; Dyke, —; Bowden, —; Gilbert, — M.R.C.S.; Gilbert, Henry; Kingsley, —; Henry, —; Mapleson, John; Mapleson, —; Cook, — M.R.C.S (Weedon); Ashwell, James; Easson, J. M.R.C.S.; Smale, W.; Matthews, H. P.; Barker, —; Barker, Wm.; Hanakowski, —; Tomkins, J. Newton F.R.C.S.; Manton, John R.; Dubois, A.; Jamieson, —; Meadows, D.; Dixon, —; Weiss, Felix; Wetters, Thos.; Patrick, —; Weedon, —; Winterbottom, —; Rogers, —; Evrard, —; Erichsen, Professor; Spence, —;

Statham, J. L.; Brock, —; Thomson, Adam; Webb, J. W.; Parker, — (Birmingham); Keene, — (Bolougne); Phillips, —; Redwood, Professor; Mitchell, —; Roberts, —; Cocking, W. S.; Stucks, —; MacRae, James; Bursell, —; Pillins, —; Hopkins, —; Humby, —; Williamson, — (Leicester); Bartlett, G. B.; Levison, Dr.; West, —; Matthews, John; West, B.; Roff, Felix; Purland, —; Belling, George; Thompson, A.; Belling, B.; Carter, —; Maclean, Samuel M.R.C.S.I.; Coleman, —; Miles, E.; Bennett, W.; Bennett, F.; Harding, J. H.; Bensusan, —; May, W.; Kernot, —; Simpson, —; Cronin, —; Hampson, —; Foster, —; Gibson, W.; Burnett, J.; Leguire, Wm.; &c.

At a few minutes after 8 o'clock, the President, Mr. J. Robinson, entered the apartment, accompanied by the Vice-President, Council, and Secretaries; and was very warmly received by the company.

Having taken the chair, the President called on Mr. Rymer, one of the secretaries, to read the correspondence.

Mr. Rymer then read letters of apology from Lord Stanley (who expressed his wish for the success of the undertaking), Mr. W. Coulson, F.R.C.S., Mr. Baron Bramwell, Sir Gardine Wilkinson, Sir W. Ousley, Professor Owen, &c.

The following correspondence was also read:—

"College of Dentists of England,

"5, Cavendish Square, London, Feb. 2, 1857.

Sir,—I am requested to inform you, that, by the unanimous voice of the Council, cards of invitation to the Inaugural Meeting of the College (to be held at the Hanover Square Rooms, on Saturday, the 14th of Feb. next) will be placed at the disposal of the Council of the Odontological Society, for the use of its members. I regret that they will not be ready in time for distribution on the occasion of the Society's meeting this evening, but it will afford me much pleasure to forward them on Thursday next, or earlier if possible.

"I remain, Sir, yours most respectfully,

"To S. Cartwright, Esq." "ALFRED HILL, Hon. Corresponding Sec."

"Odontological Society, Feb. 9, 1857.

"Sir,—I much regret that sudden and severe indisposition has prevented the President personally replying to your courteous note of the 2nd inst.

"I beg to state, that the Secretaries have not been authorised to issue the cards of invitation to the members of the Odontological Society, which you have politely forwarded. I therefore return them to you.

"I have the honour to be Sir,

"Your obedient Servant,

"To A. Hill, Esq." "SAMUEL CARTWRIGHT, Hon. Sec."

Mr. Cartwright's letter elicited marked indications of disapprobation.

The President then delivered the following address; and while doing so was several times interrupted by loud bursts of cheering:—

Gentlemen: In electing me the first President of the College of Dentists of England, you have conferred upon me the highest and most distinguished honour it was in your power to bestow. The responsibility attached to the office is indeed great; but I cheerfully accept it, because, limited though my individual abilities are, I have the fullest confidence that, acting with your talented vice-presidents, council, and secretaries, I shall be able to do good service in the promotion of the all-important object which our profession has

determined to achieve. Gentlemen, at this, the Inaugural Meeting of the members of the College of Dentists, permit me to congratulate you on the fact that all our proceedings have been public; that the movement in which we are engaged has at no period been sectional; that the entire profession was invited to join in it before your council was even formed, much less invested with power; and that, therefore, the gentlemen whom you have chosen to conduct the affairs of your college during the first year of its existence are, in their official capacity, the elected representatives of the dentists of England. From the moment of our starting up to the present we have had the advantage of free and open discussion. In open assembly, the general laws for the regulation of your body were passed, and your council, secretaries, and other officers elected. Thus have you disarmed suspicion, and day by day gained fresh adherents to your intelligible, and let me add, incontrovertible principles. Some few of our brother practitioners may differ in opinion with the great body of the profession, but I have reason to believe that we have the goodwill even of those dissentients. At all events, we shall endeavour to deserve it.

No one has attempted to deny that the position of our profession, whether in its relation to the other branches of the healing art, or the public generally, or as affecting our own *status*, was anything but satisfactory. Were it necessary to adduce proof of this, we have it in the large number of practitioners who have sent in their adhesion to the laws which are to regulate our practice, and bind together the members of our college. Those adhesions show the anxiety of the dentists of this country to attach themselves to an institution based, as this is, upon sound and liberal principles, namely, "self-government and the education of our own members." We have the highest respect for the College of Physicians and an equal respect for the College of Surgeons, but we think that Dentists can best be educated and examined by a College of Dentists; at the same time that a prescribed course of independent instruction will be sure to elevate our profession intellectually and socially. A few months since, and we were not a recognised professional community. We cannot much wonder at this when we consider that we were without a head, without a governing body, without laws to guide our practice; but already things have so changed, that our claims to rank with the other branches of the medical profession are universally acknowledged. This, gentlemen, is to be ascribed to the movement on which we have entered, and to the publicity of all our preparatory proceedings. The press has put forward our claims to be recognised as zealous cultivators of our art, and, therefore, entitled to that rank which public opinion has conceded to us. Gentlemen, although requested by the council to prepare an address to the members of the college, it is not my intention to trespass on your patience by giving you an elaborate history of dental science; but I shall, with your kind permission, concisely sketch the progress of the dental art, with a view of placing before you our position as a co-ordinate branch of the healing craft. To do this, it is not necessary to determine the exact date in which the practice of medicine was first known. Like many other arts, its origin is involved in considerable obscurity; but this we know, that, at a very early age indeed, the power to heal the sick, mitigate the pangs of suffering humanity, and stand between

disease and death, was esteemed to be a god-like attribute. Much has been said, and probably more written, respecting the antiquity of medicine. Now, gentlemen, I claim precisely the same antiquity for dental art. The ancients, who inclined to mythological rather than to natural causes, affirmed the science of medicine to be a divine emanation, and impersonated it, first in Apollo, and next to Æsculapius. Thus its early history is mixed up with mythology and poetry. Although it is impossible to imagine a state of primitive society so happy as to be free from pain and disease, yet we find that in proportion as people advanced towards civilisation, and abandonded their more simple habits of living for idleness and luxury, so did disease in its various forms call into requisition the skill of the physician. Those same habits of refinement and luxury, and the consequent attention to personal appearance, must have rendered the practice of the dental art one of considerable importance even at a very early period of the world's history. According to Herodotus, there was a subdivision of medical science, and no practitioner was allowed to practise any but his own peculiar branch. Thus, some were occulists; others attended solely to diseases of the head; and, others again, to those of the teeth. It is not, however, till the time of Hippocrates that we meet with any distinct notice of diseases of the teeth. This appears the more extraordinary, as the significance of these organs—to say nothing of their useful or ornamental functions—was regarded by the ancient Egyptians in a very remarkable manner. One of their most severe and degrading punishments consisted in the abstraction of a front tooth. There can, therefore, be, I think, little doubt that the manufacture of artificial teeth and other branches of the dental art were practised at a much earlier date than that of which we have the first mention in history. The loss of a front tooth, whether by disease or otherwise, would, during the existence of that Egyptian punishment, have given rise to unpleasant suspicions; and it may be presumed that every exertion would have been made to supply the deficiency. Belzoni and others discovered rudely manufactured teeth in the sarcophagi of the Egyptians. Again, as regards the use of gold leaf, Sir Gardiner Wilkinson observes as a singular fact, that the Egyptians stopped teeth with gold—a method of stopping not very long practised in Europe. Proof of this has been obtained by the examination of some mummies from Thebes. We have historical evidence that the general appearance of the teeth, and their diseases, attracted considerable attention amongst the Greeks and the Romans. The wearing of artificial teeth formed the subject of satire for some of the poets. I could even, if necessary, enumerate many other circumstances to show that dentistry engaged as large a share of the attention of the ancients as did any other branch of the healing art—a circumstance to be attributed to that subdivision of medical practice to which I have before referred. Hippocrates and Galen mention sundry electuaries for beautifying the teeth, but describe nothing that may be called the proper art and science of dentistry. Albucases, an Arabian physician, who lived in the early part of the eleventh century, wrote on diseases of the teeth, and gave drawings of a number of instruments then in use for extracting, scraping, and other dental operations. He, moreover, gives instructions as to how teeth should be extracted, and directs that, if hollow, they be stopped with cotton—refers to filing teeth, and to fastening loose ones with *gold thread*. Ætius details a variety of applications for removing teeth without an operation; and it is worthy of observation that one of those applications actually contains red arsenic. This substance, as you are all aware, was introduced

into our practice only a few years ago as an escharotic for destroying the dental pulp previously to stopping!

"We think our fathers fools, so wise we grow,
Our wiser sons, no doubt, will think us so."

The red arsenic was supposed, gentlemen, to be a modern discovery; but it appears to have been very well known to some of those old gentlemen whom we, in our wisdom, are sometimes disposed to think very lightly of. However, giving the ancients all the credit to which they are entitled, it is not at all extraordinary that some of their opinions should be useless for our purposes. They had not the advantage of that mighty power—the microscope. At least no mention is made of microscopic investigations in those times to which I have been alluding. It is somewhat difficult to appreciate the observations of Hippocrates, who describes the teeth as glutinous extracts, from which the fatty matter has been burnt up by heat, and affirms that they are harder than the other bones, because they have no heat in them. Aristotle, who has some excellent observations respecting the teeth of men and animals, declares them to be the only bones which grow through the whole of life, observing that if they did not, they would soon be worn away by attrition. He adds, that the growth is manifest in those teeth that have lost their corresponding opposites in the other jaw—referring, of course, to the elongation of teeth arising from a want of an opposing force. By these few observations from ancient authors, I think I have clearly shown the antiquity of our calling; the value and importance of the teeth, as adjuncts to health and appearance, and the attention bestowed upon them at the earliest periods of medical history. I shall, however, proceed, and bring my observations somewhat nearer to our own time.

At the end of the 16th century, the dental art began to receive that peculiar attention to which, from its importance, difficulty, and general usefulness, it is eminently entitled. About that time there were no less than thirty-eight treatises published on the subject; and although their usefulness has been greatly diminished by discoveries since made, still they are highly interesting as evidence that dental surgery was in the 16th century considered of very great importance, and that time and experience only were required to raise it to its proper station in medical art. The first attempt to classify diseases of the teeth was, in the 18th century, made by M. Fouchard, who has justly been denominated the father of dental science. Previously to his time, the practitioners appear to have merely considered the teeth in their mechanical arrangement, taking little or no account of them as complex organic structures, entering by their own vitality into the formation of the living body. M. Fouchard had not only the merit of directing attention to the construction and separate treatment of the teeth, but he also pointed out the indications which, in common with the adjacent parts, they furnish of the general state of health. It was, unquestionably, a most important advancement in dental science to demonstrate that the teeth afford an indication, not merely of the apparent, but also of the innate and fundamental constitution of individuals. It was, however, only after 36 years, of close study that Haller published, in 1747, his remarkable work on Physiological and Pathological Science, the results of actual observation of the laws that govern the growth and decay of living bodies. In the meantime, rapid and valuable improvements were being made in the mechanical department of our profession. So much had the subject grown in consideration, that by the end of the 18th

century, no less than 158 works had been published on the subject, including those of Malpighi, Purkenji, Retyius, Muller, &c. The first work that appeared in England, in a popular form, was by Berdmore, and was published in 1770. In 1772, the great John Hunter did not consider it *derogatory* to his position and reputation to give the profession the result of his dental investigations, in his celebrated work on the *Natural History of the Teeth*. This was followed by the *Inaugural Dissertation on the Structure of the Teeth of Men and Animals*, by Robert Blake, in 1798. Time will not permit me, on this occasion, to enumerate the various valuable contributions to dental science that have since been published; but I may, without wishing to lessen the merits of other gentlemen, mention the names of Fox, Bell, Goodsir, Nasmyth, Tomes, and Professor Owen, as those of men who have become prominently identified with our profession, and who stand pre-eminent as physiologists and pathologists. I must also direct your attention to some of our Transatlantic brethren, who have likewise done much in the walks of dental physiology and pathology, and dental mechanism.

And here I would ask you to bear in mind that the dentists of the United States have, for some years, held, as a body, a very different *status* to that occupied by the dentists of this country; but what is still more worthy of your remembrance is this—for us, hopeful fact—that those who first attempted to found a College of Dentists in America, had to encounter precisely the same amount of difficulty as that which presented itself to the gentlemen who commenced our present undertaking; yet, in spite of all obstacles, educational colleges for teaching the dental science, both surgical and mechanical, have been firmly established in America—established, be it understood, in entire independence of any college of physicians or surgeons. These dental colleges not only have an independent curriculum of special study, but, connected with them, are dental hospitals and dispensaries, which are generally attached to the colleges. The pupils are systematically taught every branch of the dental art, by a course of study that embraces dental anatomy, physiology, special pathology and therapeutics; chemistry and metallurgy, the principles and practice of dental surgery, operative dentistry, and dental mechanism. Having gone through the prescribed course of study, the pupils are examined by the professors in each department, and if the examinations be passed in a satisfactory manner, a college diploma is granted, which authorises the holder to assume the title of "Doctor of Dental Surgery." A vast deal has been said about our wishing to adopt the *modus operandi* of the dentists of the United States—that which I have just briefly described. Now, gentlemen, I confess my inability to perceive how we lower our dignity, either individually or collectively, by endeavouring to form an institution similar to those which have not only fulfilled the object for which they were more immediately designed, but have raised the position of the dental profession generally. It appears to me that ours is not so different from every other profession, as that we do not possess within our own body sufficient knowledge of the theory and practice of our art, to enable us to educate and examine our own pupils, as dentists, without having a recourse to a college whose province it is to grant diplomas to *pure* surgeons only. In my opinion, *we, the dentists of England*, can ourselves best carry out the great objects which all legitimate members of the profession have in view; and these I may in a very few words sum up. They are, to raise our *status*—to give professional skill its rightful pre-eminence, and to

crush that *charlatanism* which has, in too many instances, succeeded in preying upon the public health and purse, under cover of a pretended knowledge of the theory and practice of dentistry. Unquestionably, the dental art has progressed in the United States. This may, in no small degree, be attributed to the energy of character for which Brother Jonathan is so renowned; but it must principally be attributed to that absence of small jealousies and invidious distinctions in reference to less fortunate brother practitioners, which allows of a free communication of ideas amongst all members of the profession, and which has brought to a successful accomplishment, the work of establishing associations for the protection and furtherance of the common interests.

The present movement arose from a conviction on the minds of many dental practitioners, that the time had arrived when the study of our science should be put upon the footing which ought to be occupied by a study which had engaged the attention of Hippocrates, five hundred years before the Christian era, and has ever since found numerous advocates, including the modern Hippocrates, the renowned John Hunter. When the movement was originated, we really had not the *locus standi* of a recognised profession. Neither had we any common bond to link us together for the advancement of the dental art. Each member did the best he could to further his own ends, and viewed the exertions of his brotherhood through a contracted medium, if not with the jealous feelings of envious rivalry. But what a change has already been effected! What a noble spirit of liberality towards each other now characterises our meetings! We no longer fear the wholesome competition that is sure to arise from the elevation of our profession. Liberal fundamental laws have been laid down, and a liberal interpretation has been given to these laws, in order that no dentist really qualified and willing to uphold the respectability and dignity of his profession may be excluded. There have been no nice lines of demarcation—no paltry distinction; and hence it is that our advance has been rapid, and that we have obtained the support of the great body of the profession.

I feel that it would be unseemly in me to conclude my inaugural address without, in your name and my own, paying the slight tribute of acknowledgment to the gentlemen who were the promoters of this great undertaking, Messrs. Rymer, Hill, Mackenzie, Perkins, and the provisional committee generally. I offer them my own and, I think I may add, your sincere thanks for their indefatigable exertions, and for the zealous and judicious manner in which they brought together so large a number of our hitherto divided profession, and thus form the nucleus of the present society. To members and associates I would express a hope that they will, one and all, prepare interesting papers on professional matters, so that we may all be benefitted, enlightened, and improved by associating together. The gentlemen who have so kindly consented to deliver before us the preliminary course of lectures for the present session, I thank most sincerely; and I earnestly commend those lectures to the members, associates and pupils, as being in every way worthy of their attentive study. If diligently attended to from the commencement, they will be found to form a very solid foundation for those studies which are to follow, and which are intended to give such an elevation to our professional character as shall command, for the diploma of the College of the Dentists of England, the respect of this, and every other country wherein dental science is practised.

Dr. Roberts, of Edinburgh, then rose and said: Gentlemen, allow me to

propose, which I do with very great pleasure, a cordial vote of thanks to our President, for the valuable, the interesting, and the eloquent address which he has just delivered [hear, hear, and loud cheers]. To that able address we have all listened with the greatest pleasure; and I am sure you will agree with me, that it deserves our warm acknowledgments [renewed cheers]. You will also feel that Mr. Robinson merits our best thanks for the great energy he has displayed, and the influence he has brought to bear on the establishment of the College of Dentists of England [hear, hear, and applause].

Mr. Bate, of Brighton, seconded the motion, which passed with acclamation.

The President returned thanks; and read a list of the different introductory lectures to be delivered in the ensuing session. The announcement of these lectures was received with loud cheers.

The company then partook of refreshments, and afterwards spent a considerable time in examining the various objects of interest with which the walls were covered, and the glass cases along the tables stocked.

Amongst those who exhibited on the occasion, were:—

Mr. Weedon.—A collection of extracting forceps, scaling and stopping instruments; instruments for microscopical preparations.

Mr. Everard.—Two cases of adjusted forceps, eighteen in each case.

Mr. Dixon.—A new and very ingenious drill, working at right angles, for the molar teeth; a new file carrier forceps for the posterior teeth; condensing forceps with shifting bits, employed in consolidating gold fittings; a large variety of stopping instruments; a collection of extracting forceps; a very ingeniously-contrived instrument case for travelling, fitted with drawers, containing forceps, stopping instruments, scalers, &c.

Messrs. Ash and Sons.—A fine collection of the various mineral teeth, a new portable lathe, various stopping instruments, extracting forceps, double pin nippers, corrundum files, new copper frames for soldering flat teeth, specimens of gum teeth, mounted, &c.

Mr. W. Harnett.—Specimens of prepared gutta percha, coloured and white; gold-foil corrundum, in its native state and in wheels; sponge gold pluggers; flat teeth with platina backs; tube molar teeth pierced for swivels; an ingenious machine for cutting mineral teeth after manufacture.

Mr. Pratt.—Three cases containing corrundum wheels and files; samples of gold leaf; gutta percha rubbers; gutta percha, pure and tinted; metallic filings, and two teeth stopped with *his* gold leaf.

Mr. Taylor.—A case containing a very superior collection of his mineral teeth.

Messrs. Smale Brothers.—An interesting collection of preparations, showing the facial nerves and arteries in wax; various skulls exemplifying the stages of dentition; beautiful and rare specimens of the hippopotamus tusk, one of them nearly annular; a bar of aluminium; an articulated skull, one side exhibiting the arteries and veins coloured, the other the nerves. This skull was beautifully prepared, and showed the interior of the petrous portion of the temporal bone; the ethmoid and sphenoid also appeared perfect.

Mr. Mackenzie.—A fine collection of minerals, used in the manufacture of artificial teeth.

Mr. Brown.—The skull of the champanzee; also a cast of the mouth.

Mr. Rymer.—A lower molar with four fangs.

Mr. Mousley (Hull).—Osseous union of the temporary lateral and canine (presented to the College).

Mr. Adam Thompson.—Three beautiful preparations, exhibiting the teeth in infancy, youth, and at full age, which he has generously presented to the Museum of the College.

Mr. Jacob.—A newly-invented hand-drill stock for excavating carries.

Mr. Harley.—A rare specimen of salivary calculus upon a piece of artificial bone-work in the anterior part of the lower jaw (presented to the College).

Mr. Parker (Birmingham).—A capital collection of models of irregularities of the teeth; others, showing the various stages of the development of the dentes sapientiæ.

Mr. Williamson (Leicester).—Pathological specimens; one of an upper molar tooth, in which exostosis is clearly defined on the three fangs; another, a portion of the upper jaw of a child exfoliated from the injudicious use of mercury; two rare specimens of exostosis and absorption combined in the inferior molars, both extracted from the same jaw.

Mr. Hepburn.—Several extraordinary models of congenital cleft palate.

Drs. Fowler and Preterre (Paris).—A highly ingenious mechanical substitute for the inferior jaw (which had been entirely removed), mounted with Allen's process; the lower substitute was attached to an upper palate plate by moveable hinge-joints as well as with spiral springs. This is one of the most interesting and novel pieces of mechanical work we have ever seen, and has been of incalculable benefit to the patient. It excited much interest at the meeting. These gentlemen also exhibited an enormous cyst at the symphysis of the inferior maxilla which had been removed, and in the interior could be discovered the exciting cause, the eruption of the left lower canine lying horizontally in the cavity of the cyst.

Mr. Underwood.—A fine specimen of salivary calculus upon the labial surface of a second molar in the upper jaw; several very interesting models of irregularities; osseous union of deciduous teeth; cases of necrosed teeth arising from mechanical injury and disease; some teeth found at Pompeii; exfoliation of a large portion of the alveolus of a child containing the embryo of several permanent teeth.

Mr. W. Bennett (Associate).—Very choice specimens of plaster of Paris (gypsum), showing the different stages of calcination.

The President.—The metals used in dentistry, from their pure to the manufactured state; specimens of all the minerals used in the manufacture of artificial teeth; also a great variety of metallic oxydes used in the enamels; a model of an American furnace for baking mineral block teeth; the *Materia Medica* of dentistry, specially prepared by Messrs. Morson and Son; a large number of casts, showing the different irregularities of the teeth, one in particular exhibited two supernumerary teeth resembling bicuspids, developed between the central and lateral in the superior jaw; a fine specimen of the osseous union of the second and third molar in the superior jaw; several osseous unions in the temporary teeth; a fine preparation of exostosis in the inferior dens sapientiæ; exfoliation of the alveolus of the lower jaw of a child, containing five of the permanent teeth; a curious development of an inferior dens sapientiæ in the coronoid process, and a large variety of other preparations illustrating dental pathology, &c.

Mr. Hutchins.—Specimen of osseous union of the permanent central and lateral in the upper jaw; exostosis at the fang of lower bicuspid; exostosis at the neck of an upper canine, the deposit having partially covered the anterior surface of the enamel.

Mr. Jabez Hogg.—A large number of beautifully-executed diagrams, illustrating the development of the teeth and their structure, as seen under the microscope. Mr. Hogg's valuable microscopes (manufactured by Baker) were

exhibited upon a platform; and this gentleman kindly lent his large collection of sections of the teeth, and personally explained their structure.

Mr. Baker also exhibited several of his microscopes.

Mr. Purland exhibited two cases; the first contained fine specimens of the canine tooth of Bengal tiger in section, showing dental pulp. Lower incisor of African lion. Molar of rhinoceros, in section. Upper canine tooth of alligator, in section, from India. Incisors of heifer, in section. Incisors and molar of bull, whole and in section. Incisors, canine, bicuspids, and molar of lamb. Incisors, canine, bicuspids, and molars of sheep, whole and in section. Teeth of pig, whole and in section. Horse, crown of molar, and molar in section, from Waterloo. Upper and lower jaw of a monkey. Lower jaw, and upper set of teeth of a fox. Section of jaw of sperm whale, and tooth of sperm whale in section. Sections of elephant's tusk. Section of hippopotamus tooth. Section of walrus tooth. Teeth of shark—antediluvian—very fine.

The second case contained a fine collection of human teeth. Sections of central, lateral, cuspid, bicuspid, molar, and sapientiæ molars, ordinary and extraordinary size, upper and lower. Very extraordinary, lower incisors, lateral and canine teeth. Canines with two and three fangs. Bicuspids with three fangs. Lower molars with three fangs. Upper set of infant's teeth. Staminæ of permanent set. Eleven varieties of dens sapientiæ, from small to very large. Sapientiæ with one, two, three, and four fangs. Sapientiæ of very remarkable formation, fangs at right angles, &c. Supernumerary teeth taken from the palate. Nerves of centre, lateral and canine, displayed. Eight specimens of the formation of salivary calculous deposited upon the teeth. Eight specimens of salivary calculous, removed from the teeth. Dens antiqua—Egyptian, British, Roman, Anglo-Saxon, Danish. Eleven teeth and stumps extracted from one patient, in May, 1845, whilst in the "Mesmeric Trance."

There were many other contributions, which our space will not allow of our noticing.

MONTHLY MEETING.

The first ordinary meeting of the members of the College was held on Tuesday evening, March 3rd, for the reading of papers on professional subjects. The chair was taken by the President, who called on Mr. Rymer to read a list of twenty candidates for admission at the next ballot for members. Mr. Fox then announced the receipt of fifty-three contributions to the museum, including specimens of the human teeth, skulls of fish, early specimens of mineral teeth, anatomical preparations relating to the teeth, ancient tooth forceps, &c. The names of the donors are Messrs. Harding, Hockley, Mackenzie, Hill, Fox, A. Thompson, Dubois, Rymer, Austin (Liverpool), Brindley (Sheffield), Mosely (Hull), West, and Cooking. Mr. Rymer also read a long list of valuable contributions to the library, from Messrs. Ash, Dubois, Purland, and Fox. At the conclusion of the report, the President expressed his thanks to the donors for their liberal contributions, and announced that Mr. Mackenzie would now read a paper.

Mr. Donaldson Mackenzie then read a paper upon that portion of mineralogy which bears directly upon the production of mineral teeth.

He introduced the subject by remarking, that the college movement being essentially an educational one, he had prepared a paper on the properties of

minerals, with a view of inducing the attendance of the junior members of the profession, and advocating the necessity of every dentist acquiring a knowledge of the subject. Half a century since, the study of the science of mineralogy would have been looked upon as superfluous, or perhaps useless; but now, judging from the specimens of mineral work exhibited in the lecture-room, such vast strides had been made towards perfection, that it was not now safe or right for any dentist to be ignorant of the science; and he had no doubt but as our knowledge of mineralogical chemistry advanced, perfection in mineral works would follow in a proportionate degree. Indeed, he could not see how excellence could be attained in any undertaking without an acquaintance with the nature of the materials employed. After a few remarks upon the life of the late Mr. Wedgewood, and his inventions applicable to the profession, as introductory to this subject, Mr. Mackenzie gave a slight geological sketch of the crust of the earth and the formation of igneous and stratified rocks, showing that almost all the materials necessary to compose artificial mineral teeth, were to be procured from the granite, either as a constituent of that rock, or as accidentally incorporated into its substance; that although the process of induration of rocks never took place upon the surface of the earth, namely, on to that portion subject to the influence of the atmosphere, which is not covered with water—yet that the preparatory process of sedimentary rock-making did; and it was to this disintegrating influence, that we were mostly indebted for the means of discovering those minerals which were most useful in the teeth-making. After a few words relative to the mode persued by the Chinese in their china manufacture, he described the mineral kaylin, its mode of occurrence, locality, and use to the profession, also its base, aluminium; explaining how much the dentists had been disappointed in their hopes of finding this metal an auxiliary, which is now produced in large quantities from the Greenland mineral cryolite, showing it to partake of the nature of metals perfectly unfit for any purpose the dentist could adapt it to. The next mineral described was vitrious and calcedonic quartz, quoting the disquisitions of the learned upon the igneous origin of the former, and the aqueous origin of the latter; Mr. Mackenzie entering rather warmly into the curious speculations which exist, regarding the origin of flint, which he said was not yet satisfactorily defined, and was still open to investigation—one replete with interest to the inquiring mind. Mr. Mackenzie next drew attention to the mineral felspar, pointing out its varieties, their local appearance, chemical equivalents, also their individual and combined uses to the dentist.

This was followed by a discourse upon the minerals talc, mica, and asbestos; describing their peculiarities, localities, appearance, and general uses to the dentist, as improving the tone and quality of mineral teeth; he likewise alluded to their domestic appliances. With these, he concluded the category of minerals made use of in the substance or body of the teeth; made some remarks on the native oxydes of titanium, uranium, crome, gold, platina, iron, copper, cobalt, &c. Next came under review, and were examined *seriatim*, their individual action upon mineral substances, the modes of obtaining the various shades of colour, and also the preparation of the artificial oxydes themselves.

When Mr. Mackenzie concluded, the President thanked him for the very interesting scientific paper he had read to the meeting, and on which he (the President) invited discussion.

Mr. P. Matthews requested to know whether in the manufacture of his

teeth, Mr. Mackenzie had ever mixed his oxide of gold in conjunction with felspar?

Mr. Mackenzie replied in the affirmative; and observed, that when mixed with felspar, the oxide was rendered more fusible.

Mr. Perkins wished to be informed what proportion of the oxide of iron to the oxide of gold would Mr. Mackenzie recommend.

Mr. Mackenzie regretted that he could not, at the present moment, remember the proportions.

Mr. Purland repudiated the idea of the Chinese having been the first to manufacture teeth; and referred to numerous specimens in the British Museum, manufactured between 4000 and 5000 years ago, by the Egyptians, who he considered were the original makers.

On the subject of flint, Mr. Purland said, he had discovered pieces of wood in the centre; and remarked upon the artificial teeth he had found in mummies.

Mr. Weiss enquired whether arsenic had ever been employed in the manufacture of porcelain teeth?

Mr. Mackenzie observed, that this substance would not stand the great heat.

Mr. Matthews remarked upon the large quantities of silica found in hay, straw, and glass. In the former it was found absolutely in a pure state.

Mr. Hill wished so know the probable cost of the various materials employed in the manufacture of teeth?

Mr. Mackenzie would, on a future occasion, give some explanations on that subject.

Mr. Rymer wished to know which were the best works for obtaining the requisite knowledge of these various substances?

Mr. Mackenzie stated he had found a small work by Varley, published by Weale, to be as good as any upon the subject.

Mr. Matthews stated that he had had considerable experience in the manufacture of teeth, and was desirous of knowing how much should be allowed for contraction during the baking process.

Mr. Mackenzie: The contraction was, in the first instance, sufficient to crack the material, which was afterwards filled up, and again submitted to the process.

Mr. Williams remarked that he had found the contraction so great, that when a piece of work had been submitted to the baking process, it did not afterwards fit the model.

Mr. W. Bennets (Associate) remarked, that he had found from practical experience, that the best model to stand the heat of the furnace without contraction, and upon which the platina plate was placed during the baking, was composed of asbestos, plaster of Paris, and sand.

Mr. Bell had had considerable experience in the matter, and he found that the contraction amounted to one-fifth.

After a few observations by Mr. Harley and Mr. Perkins, Mr. Mackenzie described the process of making a piece with mineral gum, observing that on some future occasion he would endeavour to illustrate this part with suitable diagrams of the furnaces, ruffles, &c.

The President observed that as they had not at present any laboratory, furnaces, &c., in which to give practical demonstration, he and his partner would be very happy to afford the use of their own to show the process of enamelling to any student so inclined. The meeting, he was quite sure, would cordially

agree with him in thanking Mr. Mackenzie for the interesting and instructive paper he had been kind enough to read.

Mr. Matthews then moved, and Mr. Purland seconded, a cordial vote of thanks to Mr. Mackenzie, which was passed with applause. This terminated the business of the meeting. The members and their friends then examined the various collections of minerals and metallic oxides used in the manufacture of teeth; specimens of sets and partial sets of teeth manufactured from fifty to sixty years back; also, the various specimens of single mineral teeth belonging to Mr. Purland and others.

LECTURES.

Dr. Steggall's Lectures.—On Thursday, Feb. 19, Dr. Steggall delivered the first of his course of four lectures on "Decriptive Anatomy," to a large number of the Members and Associates of the College. The lecturer observed, in commencing, that he was not prepared to see such a large audience; neither must they expect that he could do justice to his subject in four lectures; but as this was considered by the Council to be more of an introductory course, he would endeavour to compress as much as possible into each of the four.

In the course of this and his three subsequent lectures, Dr. Steggall treated his subject in detail, giving the student a remarkably clear exposition of the structure of the head and jaws, and the primary and permanent teeth, muscles of the mouth, &c., &c.

LIBRARY

In his fourth lecture the doctor [illegible] to the arteries, veins, and nerves, dwelling particulary on the external corotid and its branches, the superior thyroid, lingual and facial; the occipital and auricular; the inferior pharyngual and the temporal and the internal maxillary. He then described the cerebral nerves, dwelling particularly on the second and third branches of the fifth pair, viz., the superior and inferior maxillary nerves and their connection with the teeth.

On the whole, his course of lectures formed an admirable introduction to the studies which the Council has determined to make a *sine qua non* for all who propose to graduate in the College of Dentists.

At the close of his fourth lecture, Dr. Steggall was greeted with loud and long-continued applause; and

The President observed that they were much indebted to Dr. Steggall for the kind and liberal spirit he had displayed in delivering these introductory lectures. All present must be aware how difficult it must have been to compress into four lectures what ought to occupy some twenty or thirty. They begged to thank Dr. Steggall, and when they again met next session, they hoped to extend the course to some twenty-five or thirty lectures upon this important branch of study. He must also thank Mr. John Harnet, for his kindness in having lent the beautiful anatomical preparations for illustrating the lecture.

The *Medical Circular* thus alludes to Dr. Steggall's lectures:—"On Thursday evening, March 12th, Dr. Steggall concluded his introductory course of lecture on the Descriptive Anatomy of the Head and Face, to the students and members, at their Lecture rooms, 5 Cavendish-square. Dr. Steggall is a careful and lucid demonstrator, and will prove a valuable teacher to the students of

the College, should they be fortunate enough to secure his services as Anatomical and Physiological Lecturer for the future. The short course of lectures were well attended, and from the quiet earnest attention displayed by the auditory, it is manifest that the desire to acquire professional knowledge is thoroughly awakened. The lecturer and students have been much assisted by the kindness of Mr. John Harnet, who, in the handsomest manner, has supplied them with many beautiful osteological preparations, which enabled the lecturer clearly to demonstrate his subject, and the students to follow his course with ease."

Mr. James Hogg's Lectures.—Mr. Hogg, Surgeon to the Royal Westminster Opthalmic Hospital, delivered his first of a course of three lectures, on Thursday, March 19. The lecture-hall was crowded by members and associates. Around the hall was a fine collection of diagrams, &c. &c. The subject of this very interesting lecture, which was listened to with the most marked attention, was "Histological Anatomy, its value to the student; the Microscope, historical introduction, optical arrangements, appliances, and preparation of objects."

Mr. G. Simpson's Lectures.—A course of lectures on "General and Special Anatomy," will be commenced by Mr. G. Simpson, F.R.C.S., on the 2nd inst.

THE COLLEGE OF DENTISTS OF ENGLAND: ITS ORIGIN AND DEVELOPMENT.

(Communicated.)

In commencing the record of the reformatory movement in the dental profession, bearing the above title, it is both natural and pleasant to revert to its real orgin, and notice the elements from which it sprung—to trace backwards step by step the progress of the scheme, which, within a few months, has grown so steadily, and at the same time so firmly into a definite form.

If we look at the College of Dentists of England, primarily, a recognized institution for the advancement of dental science and art,—and secondarily, and as a matter of sequence, a guarantee to the too long plundered public,—we see a council, with its presidents, vice-presidents, treasurer, and secretaries, the necessary office bearers to provide for its efficient working, a long list of members, a complete set of lectures for the first session, and the nucleus of a museum and library; in all a goodly array, with a certain solidity of purpose about it, which bids fair to stand the test of divided opinions as to its capacities. This we are compelled to acknowledge, while knowing the materials that such energetic pioneers will have to clear away.

A short time since, and this substantial fabric was to be comprehended in the persons of some eighteen practitioners; who, under the name of

provisional committee men, were content to labour at the oar, in order to bring about the best solution of difficulties which had met them, in their endeavours to carry out certain duties entrusted to them.

Another step backwards, and the interest of the undertaking was embodied in about half a dozen gentlemen, who had met to cogitate over the best manner of conducting the first public meeting of the profession, then in view, and to decide upon the method to be employed in bringing about the much-desired end.

One more step to the rear, and we find the determination to arouse the apathy of the profession, by convening an open meeting, engendered in the mind of a young practitioner, residing away from the great theatre wherein the piece was to be performed, but engendered nevertheless with a full persuasion, that perseverance would prevail.

Thus we prove, that as in many other movements of a similar nature and design, *one* person simply deserves the credit of originating a scheme, the benefit of which will soon be felt in many derections. To Mr. Samuel Lee Rymer, of Croydon, then, is due the commendation of first *practically* introducing the idea of forming a Dental College in London. It is not asserted that Mr. Rymer first thought such a thing possible; as doubtless, many other worthy members of the profession had conceived the same notion, and it is well known, that in some crude form or other, most of those gentlemen who desire to adorn, rather than disgrace the profession, had hoped that the future would bring forth some institution or association, which might be made available for the perfecting of their acquirement, both in the surgical and mechanical departments. But "*factus non verbis*" appears to have been the motto which Mr. Rymer chose to adopt. Whilst other men contented themselves with thinking the matter over, or at most, putting their thoughts to paper, he dared the danger of defeat, and leaving off *thinking* and commencing *acting*, laid the foundation of this edifice at his own risk. Here then lies his praise: to this fact his name will ever be attached; and for this effort, he certainly deserves the thanks of every gentlemen in the profession, who desires to see his chosen calling wrested from the gripe of the unprincipled and unqualified practitioner.

That Mr. Rymer had thought and pondered over the possibility of establishing an institution of this kind and calibre, may be gathered from the fact, that in August, 1855, he published his views on the necessity of reform, and laid down lines of conduct which he considered it advisable to pursue, in a letter addressed to the Editor of the *Lancet*.

That others, also, were of like opinions, may be proved by consulting the same journal for the ensuing month, as there may be found a letter from Mr. D. Mackenzie, entirely agreeing with the first writer. But it is very evident that these epistles did not produce results in harmony with the desires of the writers, for the surging wave of passing events threw nothing upon the shore which could be made available, and it was not until September, 1856, that we find any thing tangible evolved. The "British Journal of Dental Science" contained in its second number (August, 1856) a letter from Mr. Rymer, in which he reiterated his views, and concluded by expressing his readiness to co-operate with his professional brethren in the formation of a Society of Dentists. The following number of the Journal contained an advertisement, announcing Mr. Rymer's intention of calling a public meeting of the profession, on the 22nd of September, at the London Tavern, Bishopsgate Street, and asking for the attendance of such as sympathized with the contemplated projects.

The result of this advertisement was a copious correspondence on

the subject, evincing a general desire that the object the advertiser had in view might be carried out, but in some instances (as was expected) depressing doubts and prophesies of ignominious failure, were by no means forgotten. Selecting the names of those who appeared most energetic in the cause, Mr. Rymer requested their attendance at a preliminary meeting, to confer upon the most appropriate method of conducting the forthcoming assembly. This meeting was convened for Saturday, the 20th September, at the London Tavern; and those who answered to the summons were as follows :—Messrs. Perkins (Hockley Hill), Brindly (Sheffield), Smith (Chatham), Bradshaw and Bate (Brighton), and Rymer.

Mr. Perkins, as the senior person present, occupied the chair. Such arrangments as were deemed necessary were then agreed upon, and this, the first meeting of gentlemen (who were, with two or three exceptions, unknown to each other), passed off with a spirit of cordiality and thorough good-will, such as might have been expected only from and among friends of many years' standing—in itself a type and pledge of what would follow.

Those gentlemen, then, who formed this little convention, had ample cause for congratulation; for although in itself unostentatious enough, it was *the first stone* in the high wall of isolation loosened and thrown down—the *germ* of brotherly feelings, which was destined in its growth to eradicate the ancient spirit of jealousy and distinction, which so highly coloured and completely prevaded the dental profession.

The experiment of testing the views of dental practitioners was now about to be performed; and the two short days which intervened were days of anxiety to the few more immediately concerned. At length the eventful Monday evening came; clad in wet garments, and with a look, dismal enough to dispirit and becloud the hopes of men depending upon far more substantial and united patrons for support, than those who, now more anxiously than ever, awaited the result of the notice publicly advertised, of this their introductory meeting. The time wore on, and one by one (despite the wind and weather) the audience increased, until the room was *well filled;* some of those present having come very long distances, to testify in person to the necessity of professional reform and education. The gentlemen who had met on the previous Saturday had decided that three concise, yet comprehensive, propositions should be laid before the meeting. Several copies of these had been printed, but it was necessary to procure movers and seconders, and this Mr. Rymer succeeded in effecting, by making personal application to several parties present. At the hour announced, Mr. Alfred Carpenter, M.B., was proposed and unanimously elected to fill the chair. This gentlemen in his address explained, that "he was not a dentist, but as a medical practitioner he took a lively interest in the movement;" and as an impartial person, no doubt the selection of a gentlemen out of the profession (so to speak) was a judicious one, in the absence of a dentist of the highest standing.

Mr. Rymer (who was warmly received) explained the reason which induced him to undertake the responsibility of convening the meeting, and proceeded to show why it was important that a step like the present should be taken. The three resolutions were then passed; the tendency of which was, that—1st, Reform in the profession was necessary; 2d, That immediate steps should be taken to produce that reform; and, 3rd, That a committee to consider the best means of carrying out these ideas should at once meet for that purpose.

The speakers on the occasion were Mr. Thomson (Denmark-hill) and

Mr. Peter Matthews, as mover and seconder of the first resolution; Mr. Makenzie and Mr. Alfred Hill, as mover and seconder of the second; and Mr. Hockley and Mr. Perkins, as mover and seconder of the third. The meeting was addressed by other practitioners, and the unanimity and enthusiasm which prevailed, must in itself have been a reward to all who had a share in the matter.

The third resolution, which was as a matter of course the crowning one, involved little trouble to the parties proposing it.

Without it, the two former ones would have been null and void; and therefore, as soon as the bare formality respecting it had been gone through, in the most liberal manner imaginable, the names of certain gentlemen were put forward from the body of the meeting, and received, for the purpose of forming the comittee. These were as follows:—

Mr. J. Bate	Mr. W. Harnett	Mr. R. Thomson
„ S. Cartwright	„ Hockley	„ R. White
„ C. J. Fox	„ A. Lowe	„ Rogers
„ A. Hill	„ P. Matthews	„ E. Saunders
„ S. L. Jacob	„ W. Perkins	„ J. Jones
„ D. Makenzie	„ S. L. Rymer	„ Watt
„ Bradshaw	„ C. Stokes	„ C. Vasey
„ Coker		

With power to add to their number.

Letters were read during the proceedings from Mr. Charles Stokes, Mr. F. J. C Scott, Mr. White, and Mr. Edwin Saunders, all expressing approval in the movement.

A letter also was read from Mr. Thomas Bell, declining to take part in the affairs of the evening; and it must be here stated, that the offer of *presiding* had been made to this gentleman, which had also been declined.

Towards the latter part of the meeting, a statement was made by a gentleman present, that certain practitioners had taken up the idea of professional reform; and to this end had memorialized the council of the Royal College of Surgeons, praying for a special examination in dental surgery, as in midwifery.

This announcement created a degree of surprise, on account of the *privacy of the act*, and its consequent reflection upon the profession generally. The hitherto uncared for members of this branch of surgery awoke to the astonishing reality, that a small number of their body had gratuitously and secretly become the foster parents of the rest; and had actually taken steps in the direction of tutoring them as to the *only* means, of becoming recognised and qualified practitioners of dentistry.

That the Royal College of Surgeons could not grant a petition *thus* presented, seemed patent to all present; and the irritating tendency of this effort was subdued by a seemingly general persuasion, that it would never realise the hopes of the petitioners; and so with the barest comment this startling intelligence faded and died out.

The Provisional Committee elected, Mr. Rymer was requested to act in the capacity of Secretary. To this he assented, but stated, that as his time was much occupied and his health not strong, he should require the assistance of a colleague. Whether or not this observation was forgotten by the audience it is not easy to say; but it is very *certain* that *no one* offered to share the difficulties and duties of this now important post; and it is therefore but an act of simple justice to Mr. Hill, who has so assiduously maintained that position, to say that he patiently waited

until the assembly was about to disperse before he offered his services, which were most readily accepted by Mr. Rymer.

Thus, then, the men were supposed to have been found who, for the love of their profession, and an earnest desire for its more extended usefulness, were ready to devote a portion of their influence and time to effect the organization of an honourable and scientific pursuit; and render the persons engaged in it a more amalgamated and less jealous body. The observations of the speakers (in one direction at least) pointed to the hope, that before long an institution would be established, with professorships and such other offices attached, as would tend to impart a dignity to all connected with it. The names of those practitioners, who by their scientific researches and discoveries, had deservedly received the undivided admiration of the entire profession, were brought forward as those who would best grace the professors' chairs; and not a few present on that eventful occasion congratulated themselves that there were gentlemen on the committee, to whom they might look with a full assurance of hope. The object was of the highest importance; the effort to obtain it most laudable; a little help from such as had wealth and position and acknowledged influence, was as natural for the one to look for as the other to give. True it was, that the professional dignitaries were placed above the necessity of alterations; true, again, that that elevated position enabled them to smile at the less fortunate practitioners, toiling up the hill, surrounded with encumbrances and disappointments; but no less true the simple expectations that these same individuals, who, by force of circumstances singularly fortuitious, in days when competition in the dental community (then but small) was unknown, had gotten for themselves the lion's share, would *now* exert a little finger's strength to rectify a multitude of glaring errors. Unfortunately for these hopeful, hoping ones, the so-called leading men in the profession were not present in person; but yet they could not doubt the result of this public appeal to their generous sympathies,—they had only to be made acquainted with the great desire evinced on the occasion, to concur and blend their energies with the common cause.

Certainly, the meeting was called at the instigation of a non-metropolitian member of the profession; but surely it could not be a matter of consequence *who* set the ball of reform in motion, so long as it *was* set in motion. Certain, again, that the convention had not been announced by sound of trumpet, but it was so announced, that a hundred out of those who came to know of it, assembled at the prescribed place and hour. An opportunity was then given for *any* member of the profession, gentle or simple, to be present; and those who either could not or would not come, must not grumble that things went on without them. Here was an open meeting, to *discuss merely* the best method of making the wretched state of affairs, which was acknowledged by all to exist, better. The projector of the meeting, like many more at that moment, knew only a few practitioners personally, and a few more by other means; and to these invitations were sent, that they might come and assist in the deliberations of the evening. As before mentioned, Mr. Thomas Bell was invited to preside, evincing on the part of Mr. Rymer a very laudable desire to have the benefit of that gentleman's matured judgment, to guide the opinion and resolutions which would be put forth on the occasion; unfortunately, however, for reasons of his own, the offer, as before stated, was declined.

Had any of the leading members of the profession appeared, there was all the opportunity that could be desired to mould the materials then in hand into another form; and certain beyond doubt it is, that

Mr. Rymer would willingly have submitted to the *better* judgment of any of them who might have come forward; but as none of them did so, the parties then present combined to do for themselves what, if they chose, others might have done for them; and although stigmatised as "*democratic* (*?*)"—as the meeting has since been,—that part of the profession, so comprehensive and vast, desiring alteration and improvement, will have no occasion to find fault with the materials employed to effect it.

Thus far Mr. Rymer had acted in accordance with views he had entertained for some years; and the success which up to this point attended his effort, was a precursor of similar success in future; when having gathered others round him, that movement which he had set in motion, but *single-handed could not keep in motion*, should progress and develop itself, attended by the good wishes of every true friend to the dental profession. That mighty power—'THE SPIRIT OF THE AGE'—demanded *reform*; and as now shown, it did not ask in vain.

(*To be continued.*)

The following is the "declaration" made by gentlemen on their admission as members of the College:—

"In consideration of my being admitted a member of the College of Dentists of England, I hereby undertake and agree never to insert any advertisement or advertisements (excepting such as may be approved of by the Council of the College) in any paper; nor to circulate handbills, exhibit show cases, boards, or placards, or to follow any other profession, business, or calling, whilst practising as a Dentist, or to do anything that may be in opposition to the 8th and 9th laws of the said College; and in the event of my departing from this agreement, I authorise the Council of the said College to advertise my name in the public papers, as being no longer a member of the College of Dentists of England, immediately upon which I agree that my subscription or subscriptions shall become forfeited to the College."

(Signed)

The following speaks for itself:—

"COLLEGE OF DENTISTS OF ENGLAND,

"5, Cavendish Square, W.

"SIR,—The attention of the Council having been called to your mode of practice, I am desired to inform you, that inasmuch as they consider such to be in opposition to the 8th and 9th laws of the College, they wish to know whether you are ready to sign the enclosed declaration; as by these laws, all members pursuing a similar course are no longer eligible to be members of the College. Awaiting your reply,

"I am Sir, yours faithfully,

"ALFRED HILL,

Hon. Corresponding Secretary.

P.S. Should you not return an answer to the above, within a fortnight from this date, the Council will consider that you decline to sign the Declaration.

Correspondence.

To the Editor of the *Quarterly Journal of Dental Science.*

Sir,—In the movement now agitating the different members of the dental profession, which is likely ere long to assume a position that will be recognised by society, and it is hoped, by the Legislature of the country, it must be evident to the reflective mind, that forbearance and a disposition on the part of educated members to assist in amalgamating the heterogeneous mass into a compact body, will be indispensable; so that from the present date may arise men regularly educated, and legally qualified, according to rules that will admit of nothing less than a complete system of study, in order to obtain that stamp of respectability—a warrant from an authorized tribunal.

This is a critical and important period to the profession, and may be compared to a stage in life bordering between youth and manhood. We are all aiming at one common end—perfection in our profession; and in our present state of disunion, it will be necessary for many to waive distinctions, however honourably acquired, before the dental profession, as a body, can arrive at manhood with powers fully developed and matured, and endued with energy to act independently and harmoniously.

No one will deny that a systematic education is necessary to ensure success; no one will deny that the more accomplished we become, the more varied our acquirements, the more useful we are to our fellow creatures. A recognised school, therefore, centrally situated, where youth may be instructed and qualified to practice as Dentists, is of all things most wanted in our present state. We know that the College of Surgeons is not, as now constituted, capable of educating a gentleman for a dentist in the usual branches required. We know that the College of Physicians cannot do so. We, therefore, want one for ourselves, where we may have taught Anatomy, Chemistry, as it relates to our profession, &c. &c. A laboratory will also be necessary, where mechanical and practical dentistry will be taught to students, and where they may have an opportunity of assisting; and, in order as much as possible to facilitate the progress of the students in literature and science, there should be a library attached to the institution, to which all may have access.

When such an Institution is in working order, let it be recognised by the State; have State patronage, and, if possible, let the most accomplished men in the United Kingdom be appointed to the respective chairs. Let there be a certain period for attendance, and certificates granted for each course of lectures; and when the students have gone through the prescribed curriculum, let them undergo an examination in the several branches of their profession, in the Greek and Latin, and possibly in one of the modern languages; and let diplomas be granted according to the relative degrees of merit.

It is not presumed, dogmatically, to lay down the foregoing as the course necessary to be pursued, as it is hoped that by the union of members they will be

ready, after due deliberation, to adopt the proper means to elevate the profession from its present anomalous position; but there must be an adequate qualification required of all individuals who intend in future practising as dentists in this country. When this is the case we shall not without good authority and justice make our *argumentum ad judicium*.

The importance of a critical knowledge of the anatomy of the mouth is one of the greatest desiderata of the surgeon-dentist. Without it, he might with equal confidence operate in utter darkness; and he will be constantly liable to accidents, which at some unlucky moment may plunge him into most disagreeable predicaments, and imminent danger. His career, which might under different circumstances be fortunate for himself, and serviceable to his fellow creatures, will inevitably prove unfortunate to the one, and ruinous to the other.

Without a knowledge of the distribution of the nerves from the brain to the different parts of the head and face, how can he account for the many different affections which daily may fall under his notice? How can he account for the inability of the sufferer to point out the exact source of his suffering? How will he be able to demonstrate and explain the cause of the acute suffering which a patient may describe as arising in his ear, temple, neck, &c., when most likely it may arise from an exposed dental pulp? How if a patient called upon him to request to have a cuspid tooth removed, which appeared perfectly developed and in a healthy state, could he account for the patient's singular disposition to state that that tooth was the sole cause of his pain? How account for the frequent determination of the patient to have an inferior molar tooth removed, when perhaps an opposing superior molar may be the proper one on which to operate? These are but a few cases of many which daily fall under the notice of the dentist. What would be the consequence if the operator yielded to his patient's wishes?

There have been cases in which even the educated surgeon has been led astray by the representations of his patients; and there have been many in which uneducated men have succumbed; and, consequently, sorrow without relief to the patient has been the result. There are many other cases of more importance which it is not deemed necessary in a letter of this description to bring forward; but these may suffice to prove to all young persons who intend entering into this honourable profession, that without this most important knowledge the superstructure will be but a rotten fabric, built on a foundation of sand. An acquaintance with the principles of Physiology, Therapeutics, Microscopical Anatomy, Chemistry, &c., is required, to enable an individual honourably to fulfil the duties which he has undertaken to perform—duties which, when properly understood, are of the most solemn character, and of vital importance to the well-being of our fellow creatures.

There is yet another subject, and by no means an unimportant one, which ought not to be overlooked—*Mechanical Dentistry*. "The harmony of nature is preserved by each one knowing his place." The Oculist does not require a knowledge of mechanics to enable him to assist his patient; the Aurist does not;

but the Dentist does. It is, therefore, preposterous to think of compelling a gentleman to devote four or five years of the most valuable period of his life to the acquisition of the knowledge requisite to qualify him for a diploma from the College of Surgeons. In the branch, Mechanical Dentistry, chemistry will be found essential, in order that the dentist in his laboratory may be able to determine the value of the different metals he may have to make use of; and it will be found requisite to study for a considerable period before he can become acquainted with the complicated appliances which are used to form a partial or complete substitute for the natural teeth; be able to construct and apply them; and to form artificial palates, obturators, and the usual contrivances for the correction of irregularity in the arrangement of the natural teeth, where it frequently becomes necessary to vary the means employed, in perhaps the same case, or to use different appliances in different stages of treatment.

It is in this department that the practitioner may display his artistic skill, and give to his fellow man the means to improve his appearance, his articulation, and his digestion; for without well-developed jaws, supplied with healthy natural teeth, or a well adapted substitute, mastication cannot be perfectly performed, and consequently dyspepsia ensues, and an afflicting train of most disagreeable complaints.

In many instances, the young and interesting do, from sickness, lose their teeth at an early age; and without an artificial substitute, they would pass through life uncared for, and the victim of innumerable complaints. Such being the manifest importance of this branch, how can individuals or body of men presume to make or cause to be made artificial teeth, unless they have been previously initiated into mechanical dentistry, and become expert manipulators? And how can they acquire a knowledge of the various collateral branches of this department, without a course of instruction, received from able and qualified practitioners? The Dental College will supply these desiderata; and then it will be for the student to think well, and study with diligence, before he present himself for examination.

Isle of Man. JAMES KARRAN.

To the Editor of the *Quarterly Journal of Dental Science.*

SIR,—The establishment of the College of Dentists has been no hurried business; its formation had been attempted long before, but had failed. It failed, because it wanted the sanction of the majority of those it most concerned; because it was got up privately and for the interest of a few, and because it pretended to represent the interest of those it had never consulted, and by whom it had never been authorized or even known; because it was patronizing and exclusive, instead of liberal and just to all. It was resolved then, to make a new effort on public, constitutional, and true English principles, large enough, and liberal enough, to include every honourable man; and it was resolved that, while the rules of the body should be fair and just to all, and at the same time sufficiently stringent

and conservative to keep out those whose interest was not coincident with the great body of the profession, and the public, our course should be an onward one; that we would no longer be a scattered and contending swarm of atoms, each within his own little world; that *all* lights should *shine for all;* that each and all should have the benefit of his brothers' ideas in exchange for his own, each giving willingly his own contribution, large or small, according to his ability, and receiving in return the great food of knowledge collected from all. It was determined to collect the scattered and uncongenial atoms of which the profession principally consisted, and by the chemistry of friendship and honorable brotherhood, to unite all into one compact and liberal body, educating, improving and progressing; to wash out the poison of jealousy and exclusiveness, and diffuse in its stead the germ of friendship and brotherly love; to join hand and heart, one and all, each to do his duty, as an honourable member of an honourable profession.

Upon these principles a few men, for the most part previously unknown to each other, have within a few months effected that, which was by the majority of our elder brethern deemed impossible: "It has been tried before and failed," was the disheartening remark of many. It had failed, true; but what has ever succeeded with one poor trial? Each trial teaches something, and each failure leads towards perfection. By trying we find our weakness, and so by experience gather strength; there is seldom more than one right way, though there are many wrong ones, and these most frequently come first. If perfection came at our bidding, where would merit be? The grand thing is to *learn* by failure, that failure may be made subservient to success, so that each trial brings us nearer to the accomplishment of our hopes; and when at last we gain the long-sought for object, we may look with pride upon our past efforts and failures; the experience gained, and the satisfaction of having found the right way at last, will fully compensate for the trouble we have taken.

That success has in this instance been attained, we have much pleasure in knowing, and that it has been attained only through a determination to act openly and fairly to all; giving every individual concerned the opportunity of expressing his opinion freely, and of giving his consent or dissent, in the election of the representatives of his interest.

W. P.

Hospital Cases.

St. Bartholomew's Hospital.—Mr. Holmes Coote performed an interesting operation on a young female who had been severely burnt on the left side of her neck; which in healing had so contracted the parts, as to pull down the lower lip, and otherwise cause considerable deformity.

An operation had previously been performed with a view to remedy the deformity complained of, by making a horizontal incision at the root of the neck, and so dividing the cicatrix; the wound so made had been found to lessen the

strain on the lower lip, but on account of its magnitude it appeared impossible to heal it, as the contraction of the adjoining parts tended to draw the lips of the wound open, causing great pain to the patient every time the head was moved, by the raw surfaces rubbing together.

The method adopted on this occasion by Mr. Coote, was one recommended by Mr. Skey, which consists in making several small incisions in the locality of the large one, and so by gradually loosening the skin over a comparatively large surface, to allow the edges of the large one to close without losing any of the advantage gained by the first operation; and although in this case several scars are left instead of one, the wounds heal more easily, and cause less contraction in the surrounding parts. Several incisions were therefore made in the parts near the original wound, which were left to fill up. One in particular, above the wound, seemed to have the additional advantage of lessening the tension on the lower lip. W. P.

Swallowing an Artificial Tooth.—Mr. R. Lister, of Liverpool, in a letter to the *Dublin Medical Press*, writes. "On the 22nd October, 1855, I was requested to visit a lady, aged 26, who had swallowed a mouthful of pancake, and supposed that a portion of it had remained in the throat. The probang was introduced, and removed the obstruction. Her husband called upon me the following morning, and said that his wife had been in the habit of wearing a false tooth attached to a gold plate for several years; and that about half an hour after my departure, she had missed it, and felt certain that she must have swallowed it. Oct. 23rd: She passed a very restless night, and complained of pain on the left side of the epigastrium, which increased upon pressure. I directed her to apply warm fomentations to the part, which in some measure relieved the pain. Her countenance appeared irritable; her bowels were in a confined state. I ordered a half-pint mixture containing sulphate of magnesia, powdered acacia, and tincture of hyoscyamus; and directed her to partake of as much farinaceous food as possible. Seven p.m.: The bowels have been freely moved by the mixture. About two o'clock she experienced very great pain, but at the present time it is much better, and has moved somewhat towards the pyloric orifice of the stomach. She was ordered to continue her medicine in smaller doses. Her appetite is poor; she has not the least desire for food. I requested her to be particular in examining her evacuations. 24th, Eleven a.m.: She feels much better, and wishes to sit up. The appetite still remains low. The bowels have been moved twice since the last visit. Two p m.: The pain has increased to a great degree, and is of a twitching character. I ordered her to have twenty-five minims of liquor opii sedativus, and to discontinue her medicine. 28th: She still complains of slight pain in the epigastric region, in precisely the same situation as before. I ordered a mixture containing ziss of liquor opii sedativus, a fourth part to be taken on any material increase of the pain. 31st: She is much the same. The pain is increased at times, but is relieved by the opiate mixture. The bowels were ordered to be regulated, when required, with castor oil.

"Nov. 8th: The pain is less severe than before, but remains in the same situation. She does not require the opiate mixture, and the bowels act regularly; the appetite is still poor. 23rd: She informs me that she has eaten some roast beef and potatoes on the 12th instant, and from that time she has experienced no pain whatever, and feels quite well.

"She examined her motions regularly for the first three weeks, not afterwards; therefore it is impossible to state whether the gold plate has passed since that time. She has procured another plate and tooth of the same shape and size.

"This is satisfactory intelligence. But was the poor lady much the better for this month's doctoring? The half-pint mixture of Epsom salts, gum, and henbane was evidently mischievous, and the 'farinaceous' food did not mend the matter; so it is clear enough that she was 'cured' with the roast beef and potatoes."

[In some cases which have come under our notice of persons swallowing metallic or other hard substances, we have found an emetic the best remedy if applied within a reasonably short time of the accident taking place, as the distance from the stomach is much shorter than the whole length of the intestinal canal, to say nothing of the danger of laceration during the transit, or possible permanent stoppage by the way. In the case of swallowing small sharp articles such as pins, &c., we are always forcibly reminded of a schoolfellow who had accidentally swallowed a pin, and in great terror applied to a medical man, who first enquired if he felt any pain, and being answered in the negative, advised the young gentleman to eat as much *hard pudding* as possible for a few days; which seemed to have had the same effect with the pin, as the roast beef and potatoes had with regard to the artificial tooth in the above case, as it never gave him any trouble.]

Melanotic Growth in the Orbit External to the Globe.—At the meeting of the Pathological Society, on the 6th of January, Mr. Curling showed a specimen of Melanotic Growth in the Orbit External to the Globe. A man in poor health, aged 48, had been admitted into the London Hospital, his right eye being pushed out by a growth behind it. The first symptoms had been noticed four months ago. The eye was destroyed by pressure, and the lids everted. Extirpation of the entire contents of the orbit was performed. The growth proved to be a large mass of melanosis, external to and behind the sclerotic. It was united closely to the sclerotic and to the optic nerve, compressing the latter, and extending deeply into the orbit. Profuse bleeding followed the removal, and was arrested only by free application of the cautery. Mr. Curling directed attention to the unusual feature of the case, which was, that the disease was external to instead of within the globe.—*Medical Circular.*

Case of Tetanic Catalepsy.—A paper "on a case of Irregular Intermittent Tetanic Catalepsy," was lately read at a meeting of the Harveian Society by Dr. W. Camps, one of the vice-presidents. The peculiarity of the case was thus stated:—"Ordinarily there need be no confusion between catalepsy and tetanus, except in those very rare cases, like the present, in which the catalepsy was attended with almost insurmountable rigidity; for commonly these two diseases are sufficiently distinct, and diagnostically characterised; but in the case under consideration, some of the symptons of either disease were so intertwined and complicated with each other, as fully to justify the designation thereof, as one of "tetanic catalepsy." The subject of the present case was a female aged 14, the catamenia had commenced, and been repeated a few times, but had been altogether suspended from the appearance of this disorder. She expressed scarcely any desire for solid food, although she anxiously asked for liquids. She could manage to perform her ordinary duties, but they were evidently an effort to her.

Dr. Camps had the opportunity of seeing this patient on several occasions, and for some length of time at each visit. During one of these visits she was waking up from the cataleptic state, and some parts of the trunk were slightly convulsed, but the extremities were in a state of rigid contraction, and utterly immoveable; yet at the *very instant* at which she awoke conciousness returned, and with it a normal condition generally, except that she was left very weak.

Similar attacks of muscular attraction, attended with loss of consciousnes, continued at irregular intervals to affect this young patient, for a period extending over twenty weeks; lasting commonly from one to three days. She ultimately recovered her health, the cataleptic attacks having disappeared, although much weakened in body.

Dental Memoranda.

By T. Purland, Dentist, Phil. Dr.

Belzoni and others discovered rudely-manufactured teeth in the sarcophagi of the Egyptains. As regard the use of gold leaf, Sir Gardner Wilkinson observes, as a singular fact, that the Egyptains stopped teeth with gold.

It is true that rudely-manufactured teeth have been found in the heads of Egyptian mummies; but, it is equally true that teeth of a very superior make and adaptation have also been found; some carved in ivory—others in sycamore wood; and some have been found fixed upon gold plates.

Of these varieties, some are deposited in the valuable and extensive museum belonging to Joseph Mayer, Esq., F.S.A., of Liverpool—others are in the museums of Berlin and Paris; and I am in possession of a tooth found pivoted to a stump in the head of a mummy in the collection of a lamented friend.

Of stopping with gold, several instances have come under my notice, particularly in a mummy in the Salt Collection, sold by Sotheby in 1836, in which three teeth had been stopped; I have endeavoured to trace the mummy, but in vain.

If the Dental art was a separate branch, or practised by jewellers, silversmiths, and others, as in the last and part of the present century; or in conjunction with medicine, we have no means of knowing; but that it was extensively practised there is abundant testimony in the writings of the ancient Greek and Roman authors.

During the middle ages we have no information, but in the reign of the Second Charles, advertisements begin to appear; in the reign of Anne they become common, and continue to increase in number and verbosity throughout the century.

The locality of dentists, or those that assumed the title, is worthy of note. Courts and alleys were, for the most part, selected: Raquet Court, Crane Court, Walker's Court, Red Lion Court, Bell Alley, Pope's Head Alley, St. John's Lane, Abchurch Lane, &c., are among the number.

Many, on certain days, attended at coffee houses to give audience to suffering patients, but there were also "mighty men with strong wrists" that practised in the open streets, and drew teeth "with a touch," or at the point of the sword, as is still practised upon the continent: Vanbutchell upon his painted horse, and Dr. Bossy on his stage in Moorfields—now no more fields—and Covent Garden market, are rendered familiar by prints of the day.

We learn from Fog's Journal, July 1732, "that an eminent quack doctor who usually keeps shop upon a pye-balled horse, near Fleet Bridge, was one day last week applied to by above a dozen persons in two hours' time, *all violently tormented with the tooth-ache, from each of whom he drew a tooth with the true foreign dexterity, and they all received immediate ease.*"

This passage seems to infer that *native talent* was at a low ebb!

In the reign of William III., 1690, itinerant dentists notified their calling by wearing decayed teeth fastened upon their hats, and upon a belt slung over the left shoulder; a scarce print in my collection displays five dentists decorated in this fashion.

The dental art was not confined to men; the gentler sex often "took jaw in hand." Not many years since, a brass plate upon a door in Holborn bore the name of "Miss Nicholles, Dentist;" and an antiquarian friend not long since

heard a female hold forth in the streets of Marseilles, and operate with great proficiency in an open carriage.

In London at the present day, the wives of dentists (?) take models and stop teeth!

Of dentists "to His Majesty," or "to the Royal Family," the earliest I have met with is a Monsieur Milpentine, who operated upon the Princess Louisa in 1732; he is followed by Spence, 1766; Capron, 1769; Jacob Hemet, 1769; Dumergne, 1777; Rae, 1788; Heath, 1801.

About 1760, dental gardening! or transplanting of teeth, became very fashionable, and the names of Normansel, 1769; Spence, 1769; Patence and Talma, 1774; Ruspini and Vanbutchell, appear in numerous advertisements. Many an unfortunate lady's-maid or groom, "bribed, but unwilling," lent his or her "lateral" for a consideration, to ornament the mouth of his or her liege lord or ladye.

There is an anecdote of a sweep, seen coming out of the house of a dentist with mouth bleeding, but grinning at the realization of a guinea for two front teeth, drawn to replace the black and broken teeth of a fashionable belle. This barbarous practice continued to my time—1816.

Numbers of "Incomparable Pulvils," and "Wonderful Mouth Waters" were offered to the notice of the public, in language "quaint and forcible;" but, notwithstanding all these wonders, the rebellious teeth still decayed and ached, and new ones had to be made, and "fixed like nails in a board."

As an antiquary and collector of curious books and newspapers, very many dental advertisements have come into my hands, a sample of which is enclosed for the delectation of the readers of the "Quarterly Journal of Dental Science."

"Post-Boy, June 4, 1702.

"At the Chyrurgeons' Arms, in Searl-street, by Lincoln's Inn Back Gate, near Great Lincoln's Inn Fields, liveth Tho. Fern, Chyrurgeon, being lately removed from his house at Clement's Inn Back Gate, Clare Market, who hath an excellent secret, which in one hour's time cureth the tooth-ach without drawing, and prevents it ever returning, as many of the nobility and gentry, and several hundreds of others in this city and suburbs for several years last past have found by experience. He is the author of this medicine, and to prevent its being counterfeited, disposeth of none but what he applyeth himself."

"Post-Boy, Jan. 7, 1703.

"The wonderful Mouth Water, which in an hour cureth all manner of tooth-ach and pains of the gums, proceeding either from rotten or stumps of teeth, or scurvy, it likewise taketh away all ill smells of the breath, proceeding from corrupt teeth, and enableth the party to eat freely in 24 hours' time, upon the defective teeth, preventing the pain from ever returning, by its strengthning the fibres and fixing the nerves. Price 2s. 6d., with directions upon each bottle how to use it. At the Golden Ball in Fishers-street, adjoining to Red Lyon-square, on the north side of High Holborn, London, and at no other place in the kingdom, to prevent counterfeits."

"Post-Boy, June 24, 1703.

"Mr. Pilleau, French silversmith, is removed from the upper end of St. Martin's-lane, to Cecil-court, in the same lane, where he continues to make

and set artificial teeth with the utmost nicety. He cleans likewise natural teeth."

"Post-Boy, April 22, 1704.

"The incomparable Pulvil, which effectually cures the scurvy in the gums, keeps hollow teeth from aching, rotten teeth from stinking or retaining any ill smell, fastens loose teeth, and makes them very white, and both hardens the gums and preserves them from wasting, by rubbing them with the finger, which is better than a brush, price 12d. per box, at the Black Boy, over against St. Dunstan's church in Fleet-street."

"Post-Man, Jan. 28, 1707.

"A most effectual tincture for the teeth and gums, which restores decay'd gums, preserves and keeps the teeth from rotting, and secures from ever having the tooth-ach, gives ease in the most violent fits of that pain, and procures a pleasant breath where it is wanting, saves the pallat and glands about the throat from tumours, swellings, and inflamations, and is most excellent in colds, and clears the voice if taken inwardly as is directed. Sold in 1s. bottles, by Mr. Rich. Pain, at the Rose and Crown in Pope's-head-alley, in Cornhill, and no where else, with directions to use it, where is also an excellent Balsam for the Piles."

"Spectator—1712.

"The delightful Chymical Liquor, for the breath, teeth, and gums, which in a moment makes the most nauseous breath smell sweet and charming, and in a very little time infallibly cures it, so that an offensive breath will not return. It certainly makes the blackest and most foul teeth perfectly white, clear, and beautiful to a miracle; cures the scurvy in the gums tho' never so inveterate, making the flesh grow again when almost eaten away, and infallibly fastens loose teeth to admiration, even in old people, who too often falsely think their age to be the occasion: in short, for delightfully perfuming and curing an ill-scented breath, for presently making the blackest teeth most excellently white, certainly fastening them when loose, effectually preserving them from rotting or decaying, and assuredly curing the scurvy in the gums, it has not its equal in the universe, as abundance of the nobility and gentry throughout the kingdom have experienced. Is sold at Mr. Payn's a toy shop, at the Angel and Crown, in St. Paul's Church-yard, near Cheap-side, at 2s. 6d., a bottle with directions."

"Spectator, July 14, 1712.

"The most incomparable composition in the world, of Necklaces for Children's Teeth, which for causing them to cut and breed free and easy, without the least manner of pain, it has not its equal in the universe; immediately takes away all the symptoms though never so desperate, as burnings, feavers, convulsions, looseness; especially removes the water in the head, certainly strengthening the neck when weak, perfectly keeps them from the rickets. Its admirable efficacy in all the above mentioned diseases has been experienced above a thousand times, and very justly causes it to be esteemed the most beneficial necklace in the world. Sold only to prevent counterfeits, at Mr. Pain's, toy shop, at the Angel and Crown, in St. Paul's Church-yard, at 1s. 6d. a necklace.

HISTOLOGY—ITS IMPORTANCE, &c.

Lecture by Mr. Hogg, M.R.C.S., in the College of Dentists.

Before I enter into the important subject matter I have been desired to lecture upon, viz., Histology, I must crave your kind indulgence for many imperfections and short comings you will from time to time perceive; as what I have now prepared is intended for the tyro, and I hope you will regard it as merely introductory to a more systematic course of histological investigation. The great importance of microscopy in the study of anatomy, physiology, and pathology, has been long since conceded by the scientific and learned, among the medical and other enlightened professions, of this and every other civilized nation. I know full well, that the members of this branch of the profession have acknowledged its importance; and the microscope has been cultivated with a zeal worthy of your enlightened body; and that you have in your ranks men who have contributed much towards our knowledge of the microscopic structure, not of the teeth only, but of many other important tissues of the animal body. None here can require me to tell them that first and foremost in the rank of microscopists, stands the late Alexander Nasmyth, whose reputation, from his valuable original researches, is European. Many others might be mentioned, but they are already well-known to all of you.

When I think of such men, I cannot help feeling a deep sense of the responsible task I have undertaken; and my own weakness and deficiencies have become more apparent in my attempts to deal with the subject in a way that it should be dealt with; to point or guide the student to the great and wondrous succession of phenomena, and the unbounded objects of interest, presented in Nature's secret workings, not only in this *special*, but in every other department, wherever he may direct his scrutinizing eye.

Hunter complained of the ignorance that prevailed in his day of the diseases and anatomy of the teeth. To remedy the evil, he set about writing his book on the "Natural History of the Teeth," "that dentists may be sufficiently instructed in the anatomy, uses and diseases, of every part of the tooth." You will more fully comprehend his labours in the good work, when I tell you that in the Hunterian Museum, at the Royal College of Surgeons, and accessible to you all, are to be found a series of preparations of the teeth, prepared by his own hands. The series consist of 170 preparations, derived from all parts of the animal kingdom; the account of which in the catalogue is preceded by some general observations on their nature; on their analogy to the beaks of birds; and on the varieties they exhibit in number, form, structure, and situation, according to the food of the animal, as also on the mode of their formation and growth; on the manner in which the place of those teeth which are lost is supplied; and on their relation to the stomach. These several points are illustrated in a number of sub-series, of which the three first exhibit the structure and growth of parts analogous to teeth in various tribes of animals, as the calcareous teeth of some mollusca, the bills of birds, and the whalebone in whales. The fourth sub-series exhibits the mode of growth of various teeth; first, of such as are limited in their growth, and which, when lost, requires to have their places supplied by new teeth; second, of such as are continuous in their growth, as the incisors of rodentia, the tusks of boars, &c.

The amount of animal matter contained in various descriptions of teeth, is shown in a set of preparations, in which the calcareous part has been removed by the use of dilute acids; the manner in which the teeth are shed, and their places supplied by new ones. The last sub-series displays the varieties in the situation of the teeth, which may be placed either on the jaws, the tongue, the palate, or in the stomach.

Such labours occupied the attention of Hunter, and many good and true men of science have followed in his steps;* and the time has now arrived when the education of gentlemen preparing to practice the dental art, will no longer be permitted to enter upon so responsible a duty, without a sufficient preliminary education. Your President and Council, then, in my humble opinion, have acted most wisely in taking the step they have; and sooner or later, not only the whole profession, but the public, will acknowledge their services, by recognising and consulting only those who possess the diploma of the College of Dentists.

It is within the memory of many among us, that the course of study required by the medical colleges, and the status of the whole profession, was very different compared to what it is at this time. Not many years ago, a course of twenty-three lectures was considered sufficient to qualify the medical student, and he was then admitted to practice his profession, often long before he had attained to twenty years of age. The case is much altered now; and a medical man believes himself to be a student for life: in other words, our education is never completed. I refer to this, because it has been said that your prescribed course of study is not what it should be; a very short time will correct this, as not only your council, but those who have undertaken the present course of lectures, wish you to understand, that these are merely a *preliminary course*, or as your President told you a few evenings since, *introductory*. Everyone here, I am sure, believes in the importance of the study of Anatomy as at present taught in our medical schools, as well as that of the various other departments of medical science, which must be looked to, for the purpose of giving your students the necessary information on the structure, functions, and remedial agents, employed in the dental branch of the healing art. Your students will be expected, also, to become acquainted with the healthy condition of the organs, upon which depends so greatly the happiness and comfort of everyone in this life. The seat and cause of derangement, or disease, will necessitate a knowledge of how to employ therapeutical agents, so as to secure their due effect; equally with the skill to use mechanical helps to restore the natural action, or preserve the natural structure of the part.

A knowledge of surgery, to a certain extent, will be found essentially useful, in the repair of defects, diseases, or injuries. Mechanics—mechanical surgery —will be of use in supplying laws and proper principles for guiding the mighty powers of the lever; the hand then becomes more skilful, and difficulties that often beset operations in the mouth, as much as other parts of the body, are readily surmounted.

Chemistry is of great importance, as by its aid we are made acquainted with the properties of every form of matter. In this is included the study of the chemical composition of the teeth, as well as of the soft parts which surround them, and the secretions which flow over them. Since the health of the mouth

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* Nasmyth's large and valuable collection of teeth and microscopic preparations were purchased by the Council of the College at his death, and have been added to the Hunterian Collection.

is essential to the perfect health of the stomach, and since diseased conditions of the latter react upon the former, it becomes us to understand the functions of the one, if we would fully comprehend that of the other. Allied to this consideration, is that, of the physiological chemistry of the natural organs of mastication, which at the present time is always associated with the study of histology,* or the study of the science of the tissues entering into the formation of the animal body, since "the general doctrines towards which the labours of microscopists are manifestly tending, in regard to the laws of organization and the nature of vital action, seems fully deserving to take rank in comprehensiveness and importance with the highest principles yet attained in physical or chemical science."

With respect to the means by which histological researches are carried out, it is requisite, in the first place, that the student should be furnished with optical instruments in which he can have full confidence, but his mode of investigation must be directed by the nature of the structure to be determined. To solve the difficulties of pathological histology, it is not alone sufficient to give a precise description of anatomical conditions as seen by the naked eye, but also of the elementary constituents, and the origin, progress, and retrogression of the abnormal tissue, as analysed by the microscope. The microscopical examination; therefore, starts from what has been seen by the naked eye, and pre-supposes strict observation by the latter. It is evident that histological research of this kind must demand considerable care and attention, as well as a previous knowledge of the microscope. Of all the instruments which have been applied to scientific research, there is, perhaps, not one which has undergone such important improvements, within so brief a space of time, as the microscope has received during the last quarter of a century, and there is certainly, none whose use, under its present improved form, has been more largely or more rapidly productive of valuable results. It is but proper, then, that I should first very briefly tell you something of its early history.

Was the microscope known to the ancients? Many among the learned refuse to the ancients a knowledge of magnifying glasses, since according to them the Greeks and Romans had only very imperfect notions with respect to the fabrication of glass. From a passage in Aristophanes, it is plain that globules of glass were sold at the shops of the grocers of Athens, in the time of that comic author. He speaks of them "as burning spheres." Pliny states that the immense theatre (it was capable of containing eighty thousand persons) erected at Rome, was three stories in height, and that the second of these stories was inlaid with a mosaic glass.

Ptolemy in his "Optics" has inserted a table of the refractions which light experiences under different angles of incidence; in passing from air into glass. The value of these angles, which differ only in a slight degree from those obtained in the present day by means of similar experiments, proves that the glass of the ancients differed very little from that manufactured in our own time.

There is in the French Cabinet of Medals a seal, said to have belonged to Michael Angelo, the fabrication of which it is said, ascends to a very remote period, and upon which fifteen figures have been engraved in a circular space of fifteen millimetres in diameter. *These figures are not all visible to the naked eye.*

Cicero makes mention of an Iliad of Homer, written upon parchment, which was comprised in a nutshell. And Pliny relates, in his "Natural History,"

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* From ἱστος, *a tissue or web, and* λογος *a discourse.*

—"that Myrmecides, a Milesian, executed in ivory a square figure which a fly covered with its wing." Unless it be maintained that the powers of vision of our ancestors surpassed that of the most skilful modern artists (which could be disproved by the multitude of astronomical observations made by them), these facts establish that the magnifying property of lenses was known to the Greeks and Romans nearly two thousand years ago.

We may besides advance a step further, and borrow from Seneca a passage whence the same truth will emerge in a manner still more direct and decisive. In the Natural Questions we read, "However small and obscure the writing may be, it appears larger and clearer when viewed through a globule of glass filled with water." Dutens says, he "has seen in the Museum of Portici old lenses which had a focal length of only nine millemetres." He actually possessed one of these lenses, but of a longer focus, which was found in the ruins of Herculaneum.

At the meeting of the British Association, held at Belfast in the year 1852, Sir David Brewster showed a plate of rock crystal worked into the form of a lens which was recently found among the ruins of Nineveh, by Mr. Layard. Sir D. Brewster, so competent a judge in a question of this kind, maintained that this lens had been destined for optical purposes.

The compound microscope appears only to have been known and first constructed in the early part of the seventeenth century. Both Holland and Italy have claimed the honour of producing its inventor. Borellus attributes its construction to Zacharias Jansen, of Middleburgh, in the Low Countries, who with his son John, according to this author, made his first compound microscope so early as 1590. It is stated that either he or his son presented one of his instruments to the Archduke Charles of Austria, who, in turn, gave it to Cornelius Drebbel, a Dutch alchemist, who subsequently became astronomer to James I. of England. He it was who first brought the instrument to London in 1619, where it was seen by William Borelli and other scientific individuals. It is well-known that Drebbel made microscopes in London in 1621, and generally passed for their inventor.

On the other hand, Francis Fontana, a Neopolitan, states, that he invented the instrument in 1618, and gave a description of it in his "Novæ terrestriumæ et cælestium observationes." It would appear, however, that although Drebbelt and Fontana disputed concerning the origin of this instrument, the honour of inventing it, so far as our present knowledge extends, belongs to Jansen.

The improvement of the microscope made much less rapid progress than that of the telescope. The great utility of the latter, indeed, appears to have been early appreciated, while the microscope was for a long time only regarded as a means of satisfying curiosity, or as a toy. At a later period, however, it was found susceptible of adding much to our knowledge of the natural sciences; and, no sooner was this perceived, than the most celebrated artists, mechanics, geometricians, and natural philosophers paid great attention to its improvement. For a long time, however, they were baffled by the difficulties of the undertaking, and during this period naturalists, for the most part, employed the simple microscope. Thus, some of the most important discoveries have been made by means of a single biconvex lens, and the laborious and brilliant researches of Leuwenhoeck, Swammerdam, Lyonet, Ellis, and others were thus accomplished.

The inconveniences of the simple microscope, however, are very great. Thus, when capable of magnifying largely, the field of vision is very limited,

and there is great difficulty in adjusting the focus. Leuwenhoeck had a separate lens especially adapted to one or two objects, and always had several hundreds at his disposal.

The imperfections of the compound microscope, on the other hand, were, at that time, very great, and must have appeared insurmountable. Thus, from its peculiar construction, the rays of light were readily decomposed, and circles of different colours surrounded or tinged the object, constituting the aberration of refrangibility. The form of the object was also distorted on account of the aberration of sphericity. Opaque objects could not be seen from the absence of light, and very transparent ones could not be examined from its excess.

But gradually all these different obstacles were overcome by patience and labour. The details connected with these, however, would detain us too long to enter into. Suffice it to say, that to Liberkuhn we are indebted for the means of examining opaque objects by means of a reflector; to the diaphragm of Le Baillif, for a convenient mode of modifying an excess of light. Achromatic instruments were constructed principally through the ingenuity and labours of Euler, Dolland, Frauenhofer, Selligue, Amici, Huyghens, Charles Chevalier, Lister, Brewster, and others.

But it is not enough to have good instruments; we must know how to use them. Descriptions and figures, however they may assist instruction, wholly fail in communicating just ideas of structure. To arrive at this, everyone must look for himself.

Thus it often happens that persons for the first time looking through the microscope, are really unable to see what is placed before them, from having first their attention directed to globules of air, pieces of dust, shreds of cloth, &c., which appear prominent in the field of the microscope, but which he who is accustomed to them entirely overlooks. It was in ignorance of these circumstances, perhaps, rather than from the badness of the instruments employed, imperfect as these undoubtedly were, that the numerous errors on the subject of structure originated among the early observers. "Hence," says Burdach, "it may be affirmed that Monro would have come to the same conclusion that he did, even though he had had a microscope of Frauenhofer; and that, on the other hand, Ehrenberg, even with Della Torre's imperfect lenses, would have made out the structure of the nervous substance as he has now done." In short, the sense of sight as applied to the microscope, must undergo a new education, and our ideas of organized structure be completely changed, before it is possible to arrive at satisfactory results. In no case can this be accomplished without practice and industry; but here, as in other branches of knowledge, proper instruction may do much.

To point out in detail the discoveries made through the employment of this instrument, as regards physiology, would be to give a history of modern biological science; for there is no department in this study which is not more or less grounded upon the facts the microscope has revealed.

The invisible life of modern times, as disclosed by the microscope, has been the subject of careful study by the naturalist and the physiologist. All space—within us, and without us, and around us—swarms with its countless millions, and on whatever speck or atom of life rest our eyes, we learn the instructive lesson, that man is not the only creature that is "fearfully and wonderfully made." But, however interesting is the study of microscopic life, and however beautiful its forms and startling its functions, the microscope claims a higher value in having given birth to the truly useful science of histology, which

describes the structure of animal and vegetable tissues in reference to their origin and development. The elementary tissues of animal and vegetable life have been eagerly studied both in their structure and functions, and physiologists have been thus led to the remarkable conclusion, that each integral portion of the animal or plant possesses an independent life of its own, and is performing a series of actions peculiar to itself.

By microscopic researches, Schleiden pointed out, that in vegetables, the earliest traces of organization in the embryonal sac of the unimpregnated ovule was the appearance of minute granules, which augment in size, originate cells, and constitute the structural basis of every plant. From the different transformations these undergo, all the different tissues in vegetables are formed; for instance, the spiral and dotted ducts, woody fibre, and so on. Schwann shewed that the formation of tissues in animals went through much the same process, a fact that has been confirmed by the microscopic observations of Valentin and others. Thus vessels, glands, the brain, nerves, muscles, bones, and teeth, are all formed from metamorphosed cells.

But in pathology how vastly important, nay, how absolutely necessary, is an appeal to the microscope! How often are men, who have passed their lives in the examination of morbid structure, deceived in determining with precision the presence of inflammation or softening. Indeed, how can it be otherwise, when we consider the deceptive nature of the modes in which the investigation is determined? Thus, an intense degree of redness in a tissue is by some called congestion, by others inflammation. How vague are the ideas attached to the consistence of organs!—what appears healthy to one, seems to another somewhat indurated, and to a third softened.

On the other hand, we are enabled to determine that lesions supposed to be inflammatory arise solely from hemorrhage, or simple congestion—that what has been considered tubercle was in fact infiltrated pus—that tumours imagined to be malignant, were really innocuous, and so on. Regarding all these points, we are enabled to get rid of the vagueness and looseness which prevail in connexion with them, and by means of the microscope, to arrive at positive information, on which the morbid anatomist may safely rely.

The microscope explains to us also why certain diseases are so intractable to treatment. It shows us, that several morbid lesions are composed of cells, each of which possesses an independent vitality. Thus, warts, melanosis, cancer, fungus hematodes, &c., defy the efforts of the practitioner, because he is unable to attack them through the organism of the individual in whom they exist. In fact, they are distinct beings, endowed with a vitality of their own, true parasites, which feed upon the tissue they are found in, and can only, by its destruction or excision, be removed from the economy.

As it is not possible to become acquainted, by means of naked vision, even with the *healthy* structure of organs, how therefore can we expect, by its aid alone, to arrive at the knowledge of *diseased* tissues? Need we wonder that so many affections and morbid growths are considered incurable, when we remain ignorant of their very nature?

The good service the microscope has rendered to the cause of science, in such hands as that of the celebrated naturalist, Professor Owen, will be best understood on reference to his writings. His great and valuable work on "Odontography" teems with evidence of this. To give one short extract. He says:—"It has sometimes happened that a few scattered teeth have been the only indications I have been able to find of animal life throughout an extensive

stratum; and when these teeth happened not to be characterised by any well marked peculiarity of external form, there remained no other test by which their nature could be ascertained than that of the microscopic examination of their internal tissue. It has settled the doubts entertained by some of the highest authorities in palæontology as to the true affinities of the gigantic megatherium; and by demonstrating the identity of its dental structure with that of the sloth, has yielded us an unerring indication of the true nature of its food." Thus, then, we perceive the study of the teeth presents to the naturalist unbounded objects of interest, and may become the sole disclosers of the past works of creation.

Equal in interest to the physiologist is the search into the minute structures of the teeth, with their delicate cellular arrangement of pulp and its wonderful conversion into ivory and enamel, one of the hardest substances met with in nature. I could not perhaps cite a more remarkable conversion to the important disclosures of the microscope, than what was related of the late eminent surgeon, Bransby Cooper. He said:—"I must confess that it was with difficulty I could bring my mind to believe, that the investigation of the molecular structure of tissues could ever tend to the advancement of medical science; it required a struggle to overcome the *vis inertiæ* of my mind and the stubbornness of ignorance, before I was induced to examine the minute structures of the various tissues of the human body by the aid of the microscope. I determined, however, to overcome my prejudice, and in a very short time I became impressed with the thorough conviction of the utility of the instrument in all my investigations. By the assistance of this instrument, I for the first time began to understand, that the physical and vital conditions which render the various tissues of the body competent to fulfil their important offices in the animal economy depend, in a great measure, on the ultimate arrangement of their proximate elements, a knowledge of which could not be acquired by the minutest dissections, unless aided by the microscope. As soon as the structures of the body in a state of health had become by practice easily recognisable under the microscope, I was able to distinguish the smallest portions o bone, cartilage, muscle, or fat, from each other, in consequence of their unvarying structural character, in the normal condition. I was soon incited to examine microscopically the same tissues when affected by disease; and I found that the deviations from their natural organization, were as appreciable as in their nominal structure; and I am now convinced that the microscope is as necessary to the anatomist and pathologist, as the scalpel to the one, and bedside observation to the other. I therefore became satisfied that the smallest portion of diseased structure placed under the microscope, will tell more in one minute to the experienced eye, than could be acquired by a week's examination of the gross masses of disease in the ordinary way."

"Thus everything connected with our science sufficiently manifests, that we are now in a much better train than those who preceded us. The wisdom of our ancestors, though highly useful in its day, is fast retiring before the knowledge of the present age, as that which we ourselves may be inclined to boast of may be eclipsed by the labours of the next. Yet, gentlemen, science must advance. The axiom that knowledge is power, is universally received; and however men, nursed in error, may smile at our enthusiasm, and look coldly on our endeavours, nothing can deter or check the labours of that earnest and united band, whose watchword is the search after, and discovery of truth."

I will now, with your permission, devote a short time to the consideration of the construction of the microscope. The term *microscope* is derived from *micros* little, and *scopio*, to view or see. The microscope may then be defined as an instrument which enables us to view objects which are too *little* to be seen by the unaided or naked eye. Or as an instrument which enables us to

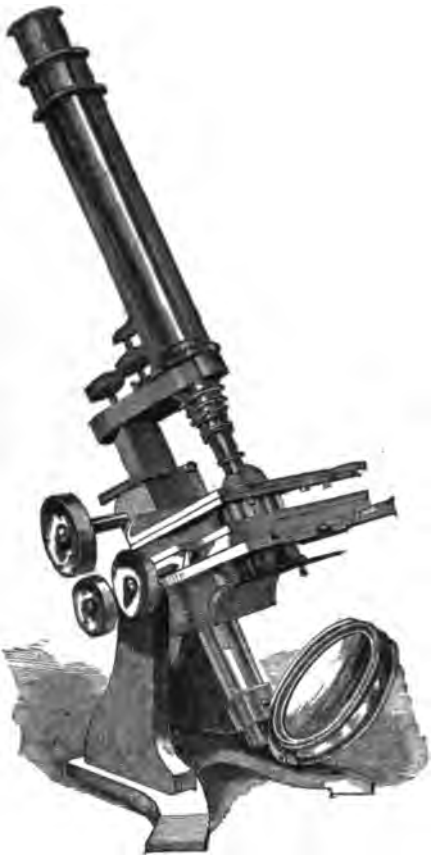

Fig. 1.—*The Compound Microscope.*

see objects distinctly at a shorter distance from the eye than is compatible with distinct vision (optical angle is here meant), and thereby enables us to see objects too minute to be seen at the distance of distinct vision. At different distances from the eye, the same object subtends different angles, as may be seen by

referring to the diagram, fig. 2 In every lens the right line perpendicular to the two surfaces is called the *axis* of the lens, and is seen in the annexed figure; the

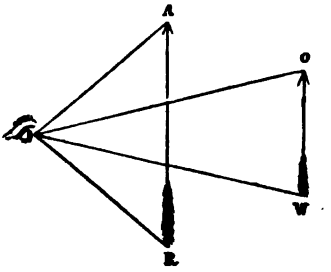

Fig. 2.

point where the axis cuts the surface is called the *vertex* of the lens; the middle point between them the *centre;* and the distance between them the *diameter*.

Fig. 3.

Fig. 3 is intended to represent the different forms of lenses in use: *a* is a plane glass of equal thickness throughout; *b* a meniscus, concave on one side, convex on the other; *c*, a double-concave; *d*, a plano-concave; *e*, a double-convex; *f*, a plano-convex.

WATT'S CRYSTAL SPONGE GOLD.

By Mr. JAMES BATE, Brighton.

Few, comparatively speaking, are as yet aware of the great boon this is to the profession; and I am extremely anxious to become the channel for extending its fame and worth, having now used it (exclusively I may say) in my practice, for nearly two years, with the greatest satisfaction to myself and patients. Its manipulation is at first difficult, but when once practice makes one familiar with its use, I think any I have been the means of convincing of its value would join me in highly recommending

it to others. I have by me some specimens of the sponge gold, also a new preparation of it called "Crystal Gold Foil," which I shall be most happy to allow anyone to inspect; also my own set of American pluggers, with which it is absolutely necessary that everyone making trial of the gold should supply himself. *Failure is impossible*, accompanied by a moderate degree of *patience* and perseverance; and I really regard "crystal gold" as likely to become the greatest stumbling block to charlatans. In the first place it is too expensive to suit the "Shylock" ideas of gain, generally ruling the handicraft of these gentlemen; and in the next, fingers so accustomed to plaster with cement, are incapable of using it; depend on it, crystal gold will form quite an era in dentistry, and a class of filling will be produced, superior in comfort and durability, to any hitherto known. Most of my patients who have tried the gold come to me to take out all the paste fillings in their teeth, which I am constantly in the habit of doing, and refilling with crystal gold.

I am in possession of that remarkable specimen of what can be done with the gold; the identical tooth filled by Dwinelle, and mentioned by him in his Treatise, p. 18, fig. 1; many are cognizant with this pamphlet, as I believe I have sent one to every dentist whose address I could discover, and Dwinelle having used pounds of the gold, his experience of it is therefore invaluable. Here I would like to say a few words with regard to the form of cavities. It must not be imagined that this is of little consideration; in fact, to the great care and judgment required in adapting the cavity to the reception of the gold, must be attributed its entire success. I would recommend all to commence with crown cavities, being, as we all know, the easier of access; let their cavity be groove-shape, and use the gold in as large pieces as possible, taking care to condense only partially, and ere every part of the piece inserted is pressed, add another, and you will find the instrument will go through the gold, and will condense each tier, till the whole becomes a solid mass, then shape, and burnish off the whole. No. 1 is most useful for small cavities and frail teeth; No. 2 is generally useful; No. 3 and 4 being much denser, use for large cavities, furnishing up with No. 2. Should the gold become damp or in any way lose its adhesive properties (which it will not do with care), place it on a piece of platina, and hold it over the flame of a spirit lamp, and it will be restored to its proper quality. Crystal gold is particularly adapted to cavities with frail walls, for it must be borne in mind that it is not introduced in the same manner as foil, which is wedged, but it packs, and will in its manipulation bear a close resemblance to "clay," and every layer of crystal gold as it is packed in, strengthens, and binds together the whole tooth. Some have asserted that it is

porous, and after a short time absorbs the fluids of the mouth; but I deny the possibility of such being the case, except through the clumsiness of the operator. A good, firm, well-condensed stopping will stand unaltered in condition. I cannot do better than quote from Dwinelle my own experience of the gold coinciding so entirely with his. "The causes of failure may be attributed: *First*, to the use of an imperfect article of gold (a fatal error);—I may now safely say all the crystal gold manufactured by Watts is far superior to any he has ever hitherto made, and that he is still improving. "*Second*, to the want of a true appreciation of the characteristics of the material. *Third*, to not having proper tools, or if provided with them, not correctly manipulating with them. *Fourth*, want of experience, and patience to learn. *Fifth*, to too rapid and careless operating. No one can succeed in the use of crystal gold, who attempts to fill fifteen or twenty cavities per day with it, as some do. The wonder would be, that such could succeed at all. Indeed, it is unreasonable to expect that at first dentists can use crystal gold with the same facility that they can foil; and even were they never able to work as rapidly with it as foil, it should be no cause of discouragement, so long as they can point to such superior *results*. This is the ultimatum for which we are all striving, the grand approximation to the highest perfection. Superior operations are soon known and appreciated, and the skill which produced them cheerfully rewarded. The fact that it requires more material to fill a given cavity with crystal gold than foil, is but another evidence of the denseness and superiority of the stopping. But time, patience, and practice, as in all other labours, here give us the sure reward of increased skill and facility, so that after awhile we are enabled, in most instances, to work with greater rapidity than foil, *and always to produce a superior result.*"

Proper tools *must*, however, be used to insure success, and all I have seen of English manufacture are not to be compared to the Americans. Not that our English instrument-makers *cannot* produce *precisely* the same if they choose (and I lent my instruments quite long enough to be accurately copied), but for reasons unknown to me, there *is* a marked difference. I must not forget to state, that if possible you *must* work dry; however, should the gold become wet, there is nothing like bibulous paper for absorbing the saliva, without injury to the points, and depressions left by the instruments, the slightest touch drawing off the moisture immediately, as blotting paper will ink. No part of crystal gold is useless, even should it lose its adhesiveness, any pieces that are left may be placed at the bottom of a large cavity, the next piece that is introduced will unite with the fragments.

A very valuable and new adjunct to crystal gold is the foil made from it, which may be worked very advantageously in conjunction with crystal gold; the *same kind* of manipulation is required, but the remarks of the manufacturer (Watts) upon it, are as follows:—"When used in rolls, pellets, ropes, or masses of any kind, the surfaces adhere to each other, and *brace* and *fortify* each other to such a degree, as to give it the appearance of working more heavily and stiffy than the same number of other manufacturer's foil; for which reason, persons who have been in the habit of using any particular number of foil, find that they prefer lighter numbers of the crystal gold foil. Dentists here use it with the same instruments as crystal gold, condense and build it out in the same way, and generally report that they can, in many cases, work more rapidly with it than with the crystal gold; some use the two forms together, but that it is built up into independent forms with dispatch and success, *is entirely certain.*" The same amount of care must, however, be taken with crystal foil as with the crystal gold, *thorough* condensation, particularly about the edges being necessary; and after going over every part with an ordinary plugger, use a sharp-pointed one to *make sure* it is absolutely solid, then burnish. I find Cypher's gutta-percha pencils very useful for this purpose, and they are especially so in removing a slight deposit on children's teeth, or for finishing after scaling in general. I fear I have trespassed too long both on time and patience, and will therefore only add, that no one must judge me an enthusiast *for* or *against* the Americans. What I see *good* and *better* than our own, I am open to receive, and I must confess *I am* an enthusiast for Watts' Crystal Sponge Gold, Crystal Foil, and the beautifully adapted American pluggers; and I most sincerely desire by my humble means to make vast numbers conversant with these valuable adjuncts to our profession.

DENTAL CHEMISTRY OF THE MOUTH.

By Mr. George Watt.

As the morbid condition which the dental surgeon is most frequently called upon to treat, is now universally conceded to be the result of chemical action; and as the most important point to be noticed, in replacing the parts lost by its devastations, is the selection of such substances as will neither act chemically on any of the substances within the mouth, nor be acted upon by them; it follows, that the chemistry of the mouth in all its bearings, invites our closest study and the most careful scrutiny. We propose, therefore, to devote some attention to the subject, without any attempt at originality or depth of thought. If

we can present the subject in such light that a majority of our readers can comprehend our meaning; and especially, if we can render our remarks practically useful, our highest ambition will be gained. And we may as well state here, that we do not intend to be either very systematic or technical. We know that many of our readers are not practical chemists; and while they think and reason so clearly for us on another subject, it will be but small recompense if we can be useful to them in this.

In the discussion of the subject, we will avail ourselves of the light of experiments, and of the thoughts of others.

The teeth are composed of three distinct anatomical elements; the *enamel*, the *cementum*, or *crusta petrosa*, and the *dentine*. These differ from each other, both in physical structure and chemical composition. Each is composed of animal matter and earthy salts. The dentine constitutes the principle bulk of the tooth, and will therefore receive our first attention.

The proportions of organic and inorganic matter vary with the constitution, temperament, and age. As life advances, the calcareous matter is increased. Hence, any two or more analyses, are not likely to agree in all particulars.

Berzelius found in human dentine—

Cartilage and Vessels	28.0
Phosphate of lime, with Flouride of Calcium	64.3
Carbonate of Lime	5.3
Phosphate of Magnesia	1.0
Soda, with Chloride of Sodium	1.1
Loss	.3
	100.0

It is needless to multiply analyses, as this is, doubtless, sufficiently reliable for practical purposes. But, that we may the better understand the subject, it may be profitable to consider briefly the chemical characteristics of each of the above ingredients.

Phosphate of Lime, as its name imports, is composed of phosphoric acid and lime. As the acid and the base unite in several proportions, more than one phosphate is formed by their union. As these differ in important respects, it is important to know which of them is a constituent of tooth-bone.

Phosphoric acid is formed by the union of about 32 parts of phosphorous, with 40 of oxygen. Its formula, is $P_2 O_5$. Lime is composed of 20 parts of the metal, calcium, and 8 of oxygen, and its formula is CaO. Now, the phosphate found in bony tissues, is composed of 224 parts of lime, united with 214 of the acid; and its formula is $8\ CaO + 3\ P_2 O_5$. This is not the neutral phosphate, but is often called the sub-phosphate, and, still more frequently perhaps, the "bone phosphate." It may be obtained pure by calcining the teeth (or bones) in a crucible, to complete whiteness, reducing to powder, and digesting with hydro-chloric acid. The bone phosphate is dissolved in the acid, and may be precipitated from it by caustic ammonia.

The sub-phosphate thus obtained is a white, tasteless, inodorous powder, insoluble in water, but soluble in acetic, nitric, and hydro-chloric acids. It may be thrown down, from any of these solutions, unchanged in composition, by ammonia, potash, and their carbonates. It is a very permanent compound, being fused, but not decomposed by the most intense heat.

Carbonate of Lime is composed of carbonic acid and lime. Carbonic acid is so well known, that it need not be described. Its symbol is, CO_2; and,

hence the formula of this carbonate is CaO, CO^2. It exists abundantly in the forms of chalk, marble, &c., and is very readily decomposed by most acids, and by heat.

Phosphate of Magnesia is composed of phosphoric acid and magnesia. Its quantity in the tooth is not sufficient to modify practically any chemical action liable to take place in the mouth.

Soda is the well known alkali, composed of 8 parts of oxygen, combined with 23 of the metal sodium. It possesses a strong affinity for acids; but its quantity is so limited that it need scarcely be mentioned in considering the chemical actions by which the tooth is destroyed.

Chloride of Sodium is the common table salt; and, though it sometimes plays an important part in the chemistry of the mouth, yet but a trace of it is found in dentine, and hence, we will omit its consideration for the present.

The *cementum* or *crusta petrosa*, contains more organic matter in proportion to its inorganic, than dentine. Its composition, according to Lassaigne, is—

Organic Matter	42.18
Phosphate of Lime	53.84
Carbonate of Lime	3.98
	100.00

As the cementum has less density than dentine, it is more readily acted on by chemical agents; but while the mouth retains its normal structure, it is not exposed to either the ordinary or incidental chemical influences within the mouth. Its constituent substances were explained in speaking of dentine.

The enamel, according to Berzelius, is composed of—

Phosphate of Lime, with Fluoride of Calcium	88.5
Carbonate of Lime	8,0
Phosphate of Magnesia	1.5
Membrane, Alkali, and Water	2.0
	100.00

The extreme hardness of enamel protects it from the action of chemical agents, which would act readily on substances of the same composition, with less density.

The animal portion of the tooth is possessed, in general, of the same chemical composition, as other organic parts of the body. Albumen, fibrin, and casein, constitute the principle bulk of animal bodies. It is now generally conceded, that these are but modifications of one and the same compound, which is denominated *protein*, and which is regarded as the starting point of all the tissues. Its composition according to Mulder, and others, is represented by the formula, $C_{40}\ H_{31}\ N_5\ O_{12}$. Its equivalent on the hydrogen scale, is 442.4.

The organic tissue of bone, cartilage, &c., is generally included under the term *gelatin*; but strictly speaking, this substance does not exist in the animal tissues, but it is formed from them by the action of boiling water.

The organic portion of the tooth is liable to decomposition from various sources. If its vitality be lost, of course it undergoes spontaneous decomposition, unless prevented by antiseptic measures. The alkalies form with it soluble compounds; and most of the acids, if concentrated, or in their nascent state, are capable of decomposing it, by virtue of their affinities for some of its constituents.

Water, of course, is an ingredient of the vital portion of the tooth, as of all the other organic tissues. In some of the chemical phenomena which occur in the mouth it plays an important part. Every one knows that it is composed of oxygen and hydrogen,—eight of the former to one of the latter.

Having now briefly noticed the chemical structure of the teeth themselves, the next thing is the chemical characteristics of the various agents, either ordinarily or incidentally brought in contact with them, which are, or may become capable of acting injuriously on them. The first that we will consider is the saliva.

SALIVA.—The saliva has, of late years, received much attention from chemists, yet the subject is still somewhat complicated and obscure. It is not our purpose to give a full, or even a lengthy notice of it. "According to Dr. Wright, pure saliva is a limpid fluid having a faint blue tinge, and a slight degree of viscidity. It is perfectly uniform in consistence, and unobscured by frothiness or flocculi."

The saliva contains but a small quantity of solid matter. This is composed of spirit and water extracts, ptyalin, fat, albumen, sulphocyanogen, and a variety of salts. These salts are usually phosphates, carbonates, lactates, traces of sulphates, and chlorides.

Berzelius found in 1000 parts of human saliva:

Water	992.9
Ptyalin	2.9
Mucus	1.4
Extract of flesh, with alkaline lactates	.9
Chloride of Sodium	1.7
Soda	.2

Simon found in 1000 parts of his own saliva:

Water	991.22
Solid constituents	8 77

These solid constituents were:

Fat containing cholesterin	.52
Ptyalin, with extractive matter	4.37
Extractive matter and salts	2.45
Albumen, mucus and cells	1.40

The saliva varies very considerably in its composition, and, no doubt, many changes may take place without a forfeiture of its right to the title of *normal* saliva. Then, its abnormal states are represented by a great variety of modifications.

The chemical agents in healthy saliva most important to be noticed, at least as far as the *dental* chemistry of the mouth is concerned, are water, the chlorides, sulphocyanogen, and soda.

Any one who will take the time and pains can, by observing a few plain directions, test the saliva, in any given case, with sufficient accuracy for practical purposes. And the first thought that strikes the operator is likely to be, "Is the saliva acid, alkaline, or neutral?" This can be usually determined with sufficient accuracy by testing with prepared litmus paper. And every practitioner should have a supply of "test papers" in his case, ready for use on any occasion that may require them. Nor should he rest satisfied with merely a general

examination; but if, for example, he discovers acidity in the mouth, he should go on to ascertain its source, whether it be in the mucus, the saliva, or in decomposing foreign substances. If it be in the saliva, he should ascertain whether it be in the secretions of all the glands, or confined to but one or more of them. All this he must know, and much more, before he can be at all prepared to treat intelligently any case in which the secretions of the mouth are abnormal.

The saliva may be tested for albumen by the application of heat. The albumen, if present, will be coagulated and render the liquid turbid. Sulphocyanogen is indicated by the redness produced by the addition of perchloride of iron. Simon says: "With a view to separate the constituents of the saliva, I evaporated a known quantity to dryness, and thus determined the water. I then treated the residue with ether, for the purpose of extracting the fat; and with water, in order to take up the ptyalin, extractive matter, and salts. The insoluble residue that had resisted the action of ether and water, consisted of albumen and mucus. Another portion of the saliva was decanted from its precipitate, evaporated to a small residue, and the ptyalin with a trace of extractive matter, precipitated by alcohol."

The specific gravity of healthy saliva varies considerably. It is generally, if not always, a little above that of water.

Pure saliva absorbs oxygen, which contributes to its digestive power. Dr. Wright found that saliva, which has been exposed some hours to an atmosphere of oxygen, converted a much greater quantity of starch into gum and sugar, than saliva not so exposed.

Morbid Saliva.—The saliva is liable to a variety of abnormal modifications. It is not our purpose, at present, to notice all of these conditions, nor any of them at any great length. As before intimated, a free acid, or more than one, may be found in the saliva. The lactic is the most common, but acetic, hydrochloric, oxalic, uric, and others are sometimes found. The acid reaction is easily detected by test paper. Normal saliva, being alkaline, imparts a blue tint to red litmus paper, while this reddens blue paper. If, on evaporation to dryness, the acid reaction is destroyed, it is evident that the free acid is not the *lactic*, which is the one most frequently found. Hydrochloric acid may generally be detected by its action on a fresh solution of nitrate of silver; but as the soluble chlorides, if present in the saliva, would produce similar results, the acid may be separated from them, and from most of the other constituents of the saliva, by distillation. Its quantity may then be estimated by the amount of chloride of silver which constitutes the precipitate. Chloride of silver is represented by the formula Ag. Cl. and is composed of 108 parts of silver to 35 of chlorine. The 35 parts of chlorine required 1 part of hydrogen to form hydrochloric acid; hence, when the weight of the chloride is ascertained, the calculation is easy.

According to Dr. Wright, "The saliva is impregnated with *lactic acid*, chiefly in gout, rheumatism, ague, diabetes, and gastro-enterites; with *acetic acid* in apthæ, scrofula, scorbutus, small-pox, protracted indigestion, and after the use of accescent wines; with *hydrochloric acid* in simple gastric derangement from immoderate or improper animal food; and with *uric acid* in gouty affections." He tells us also that acidity of the saliva is likely to occur in fevers, both typhoid and inflammatory; in measles, phthisis, venereal disease, many skin diseases, catarrhs, mumps, and in the tedious dentition of weakly children.—*Dental Register of the West.*

THE CONTRACTION OF METALS USED IN METALLIC DIES.

Professor Austen has given, in the *American Journal of Dental Science*, the following tables, showing the average contraction of the various metals used in metallic casts, employed in mechanical dentistry.

There are ten metals and alloys employed, and he finds the average contraction between boiling and the freezing points of water to be for—

Platinum	.00091	Gun Metal	.00182
Antimony	.00106	Brass	.00191
Cast Iron	.00111	Tin	.00236
Bismuth	.00139	Lead	.00285
Copper	.00180	Zinc	.00296

"An examination of this table, and comparison with the following one, gives us," says the professor, "some interesting facts.

	Melting Point.	Contractility.	Hardness.	Brittleness.
1 Copper	2000°	.02236	.020	1
2 Brass 2 C—1 Z	1870°	.02216	.024	2
3 Zinc	770°	.01366	.018	5
4 1292 Z—579 tin	660°	.01233	.024	4
5 Lead	600°	.01066	.138	1
6 5 type metal 5 L—1 A	500°	.00633	.045	10
7 Tin	440°	.00633	.054	1
8 2 L—1 T	440°	.00633	.050	3
9 1 L—2 T	340°	.00500	.040	3
10 2 L—3 T—1 A	420°	.00433	.026	7
11 5 L—6 T—1 A	320°	.00566	.035	6
12 5 L—6 T—1 A—3 B	300°	.00266	.030	9
13 1 L—1 T—1 B	250°	.00066	.042	7
14 1 L—2 T—1 B	250°	.00066	.036	6
15 5 L—3 T—8 B	200°	.00200	.045	8
16 2 L—1 T—3 B	200°	.00133	.048	7

"The last column contains an approximate estimate of the relative brittleness of the sixteen samples given. As in the other columns, the low numbers represent the metals, so far as this property is concerned, most desirable. Those marked below five are malleable metals; those above five are brittle; zinc, marked five, separates these two classes and belongs to one or the other, according to the way in which it is managed. Melted and poured into a shallow mould, it may be broken. Even in the more compact form of a well-shaped die it is possible by undue violence to crack it; an accident the liability to which is necessarily increased,

when the die is made too shallow or too flaring. Meeting with some such vexatious accident, one might well ask, taking in hand a piece of sheet zinc and bending it in any direction, if these two can be one and the same metal. The only difference is that sheet zinc is annealed zinc. By annealing zinc, we take it out of the class of brittle metals, and fit it for the mal-practice of the most unskilful operator; not meaning to say that the most skilful may not at times gladly avail himself of the change."

DENTAL ART.

(From the *American Journal of Dental Science.*)

"Surgery amputates a limb, but does not restore one; operative dentistry prevents disease from going further, but does not recover the lost form or appearance of the tooth; medicine sometimes through analogy prevents death, a point yielded only through courtesy, as positive proof must be for ever wanting to establish the fact. The supply of almost all human wants is only in a measure complete, still to be improved and added to, but mechanical dentistry, in the hands of honourable skill, reaches a perfection beyond all. In the first place, the usefulness of some artificial teeth is as complete as the natural organs, so perfectly adapted as often to dispel from the mind of the patient, in many cases, the consciousness of their presence; so completely harmonizing with the complexion, so conformable in shape to the countenance, as to leave no point of detection, no discrepancy. The lines and rotundity of youth are restored, the mouth regaining its wonted expression; its function recovered to the great advantage of the whole economy of the body, replete with beauty and usefulness.

"Little men, and *sometimes* those fortunate in worldly possessions, decry this branch to the preference of the other; the first, because their conceptions of its requirements, through ignorance, are absolutely at fault, being incapacitated to embrace the knowledge and means necessary to be acquired to strike at perfection, they fail repeatedly, and denounce their own errors and incapability in abusing a branch of the profession entirely out of their reach. The second decline its practice, because it involves labour and toil much greater than in the operation of filling teeth; because the responsibilities are incomparably greater; because the consequences of the two departments are entirely different.

In the one there is never-ceasing requirement of perfection, not only from the patient, but from the community in which they reside, with a certainty of exposure, and condemnation if a fault be committed, or in the result of failure. In the other, there is an analogy between its practice and the errors of an unfortunate physician who buries all his prescriptions with his patients. A good or bad filling is covered by years of entire concealment and absolute forgetfulness, and this occurs in almost all cases. The community of friends of the patient are absolutely excluded from all possible means of judging of the merits or demerits of the case, except as the grace or manner of the operator has impressed the patient, this being of necessity the only topic upon which either can decide. The one has to do with one material only, and that prepared by others, whose use involves time, ranging from thirty minutes to three hours, when the fee is received and the matter forgotten by all, at least for years. The other involves the employment of the arts and sciences, in the moulding of the most numerous and intricate substances into intelligent shapes and suitable compounds, whose manipulation requires weeks and months of labour. The great trouble is found in the intense difficulties to be encountered on the one hand, and the comparative simplicity on the other:—in the magnitude of the responsibility and publicity in one; the unavoidable obscurity and inobservant character of the other. The manipulations so delicate, are still made in pungent, blackening chemicals, earths, metals, gums, &c., of the laboratory, the toil and burning heat of which, though resolutely endured, are not, in their nature, always successful. Those of the operating room are performed without contact with materials, whose use there is any room to doubt or to discover or prepare; their easy labours are performed over a beaten course, whose result is the same one day as another, and whose pecuniary success depends in a great measure on personal accomplishment.

"We do not wish to detract from the skill and dexterity required in operating, or intend to give the idea that little is required in this department, for there is abundant proof of its imperfect accomplishment in the fact, that perhaps half the operations performed are entire failures, the remaining half being protected by doubt and simplicity."

To Harden Casts of Plaster.—Immerse them in a solution of alum, heated to about 84° Fah., and keep them in it for four or five hours. One pound of alum dissolved in five gallons of water, will make the solution sufficient in strength for the purpose stated.—*Scientific American.*

Miscellaneous.

CANCER OF THE LOWER LIP.—(Extract from Surgical Notes, by Dr. S. KNEELAND.)—"Fifty-eight cases, of which only five were in females, and generally beyond the age of fifty. In most, the habit of pipe-smoking was acknowledged. Many eminent surgeons, among others, the late Dr. J. C. Warren, have considered this habit one of the most frequent exciting causes of labial cancer."

SOFT FOOD.—"We believe that one of the great causes of the deterioration of the teeth of the present age is the use of soft food. Every article of diet is reduced by cooking to a pulp, and is merely mumbled in the mouth to form it into a proper bolus for deglutition, or is actually swallowed as a liquid. The mastication of solid food is essential to the preservation of the teeth. We frequently see the teeth of children coated over with a kind of white paste, and the enamel softening as if they were being macerated in a dilute acid, and in a short time fall a prey to decay and are prematurely lost. From the appearance of the teeth they had bolted their food and not masticated it. The dairy men know that if milch cows are fed upon slop, that their teeth will blacken, loosen and finally fall out, or will be disabled of feeding on hay or grass, and consequently they will not purchase them with a view to keeping them in that way. We frequently see all the teeth in this condition, but two or three, which have done the chewing, and these present a polished and healthful appearance, while all the rest are going to destruction. Several years ago, a gentleman called upon us to have some operations done on his teeth, who had naturally a good set. We told him that if he did not endeavour to use both sides of the mouth in chewing, he would loose half his teeth. He was startled to learn that we could tell which side of his mouth was most used. One side was clean and healthy, while the other was coated with tartar, gums spongy, and the teeth decaying. He said that this reminded him, and explained a remark which he heard the late Stephen Girard, of our city, make. Girard said 'that his teeth were like some persons, if he gave them nothing to do they got into *loose ways*, but if he gave them plenty to do they got tight again.' While at home, his teeth became injured by eating soft food, but when he went to sea and used harder food, they become healthy. Is there not a volume of truth lying here."—*Dental News Letter.*

MELANOSIS OF THE EYE.—"On the 24th January, Mr. Bowman, at King's College, exterpated the globe of the eye of an elderly man, whom he saw the day before for the first time, and who had a fungous protrusion which had been bleeding for some weeks. His history was to the effect that, twenty years ago, he had inflammation of the right eye; from this he recovered, but the eye gave way and collapsed, and the stump remained. The other eye continued well. Within the last few months some enlargement occurred; it began to bleed, ulcerate, and protrude, and was now a bleeding fungus. It seemed to be malignant disease of the old globe, and there was no disease elsewhere in connexion with that in the eye. The eyeball was moveable, with perfect use of its muscles. On removal of the diseased mass, it was found to be melanosis, from the dark-brown colour of a considerable portion of it, intermingled with medullary cancer. The melanosis occurs in the remains of the old case or cup of the sclerotica, and then protrudes outwards, the medullary matter springing out from its sides. The optic nerve was quite collapsed, with melanotic disease surrounding it. This Mr. Bowman endeavoured to remove as carefully as possible, although it extended to the apex of the orbit. On one occasion, Mr. Bowman said, he removed a medullary mass from a middle-aged man, four years ago, and no return had occurred, he having seen the patient very lately. In the case of melanosis just operated upon, therefore, he thought there was a chance of prolonging life. The loss of blood lately was weakening his system. This case has done well."—*Lancet.*

Dentistry in Germany.—In a letter to the *Dental News Letter*, Dr. Coar says—"I have operated for a number of persons connected with several of the smaller Courts of the interior of Germany, and I have no doubt if I were to remain in Frankfort, I should in time establish a very good practice—but as yet I am undecided. In passing, it may interest you somewhat to hear something in regard to our profession here, so I will briefly give you some of the observations that I have made since being here. I find, as a general thing in Germany, that our profession is sadly behind in the perfections which characterise it in our own country. I have been in many of the principal cities, and have had considerable opportunity of observing the character of the work done by German operators; and I feel justified in saying, that they too frequently overlook the best means of preserving the teeth. In the first place, the file seems to be used to an almost unlimited extent, and in many cases I have seen more than one-third of a tooth filed away, in order to preserve the other two-thirds. Although this operation may occasionally check the farther destruction of the tooth, still it leaves it in such a distorted condition, as to render it an object of continual regret to the owner; and as the filed surface is seldom polished, it mostly becomes blackened in a short time, and consequently the tooth is rendered still more unsightly. Filling, or "*plumbing*," as it is called here, is in most cases performed with some of the mineral succedaneums, they being the only articles that the Germans are at all successful in the use of—when I say successful, I mean that those are the only articles that they succeed in placing in a tooth so as to remain any length of time. I have seen whole rows of front teeth filled with these amalgams, and presenting all the intermediate colours between chalk and charcoal, and as a matter of course giving the possessor a very humiliating opinion of the profession of a dentist. I have observed many attempts at filling with gold, but rarely have they been attended with success; in fact, the gold that is prepared in Germany is of such a character as to render it almost impossible to fill a tooth properly with it. I have attempted the use of it on several occasions, and have found it exceedingly difficult to make even a good crown filling with it. I find that it is a customary thing among the dentists here, to defer the operation of filling a tooth until it is very badly decayed; and they seem, from some strange infatuation, to believe that there is but a very short space of time during the progress of caries, that the operation of filling can be performed with success. Frequently have I been told by persons, that they had consulted their dentists, in order to preserve a tooth which they saw was being rapidly wasted by decay, and the only advice and consolation that they have received was, that they must be content to wait until a further destruction of the organ had taken place; consequently they have left, distressed with the knowledge that that which had already become a source of alarm to them, must be permitted to continue unrestrained in its ravages until some future day; and their only hope was, that before destruction was entirely completed, some remedy would be interposed. Patiently they have waited for the time to arrive which would terminate their anxieties; and they again consult their dentist, when lo! they are sagely told, to their dismay, that it is now *too late*, and that nothing remains for them but to have inserted an artificial substitute. Of the different varieties of mechanical work, I shall not speak at present. Such being the experience of the great mass of the people who have dental operations performed, they have naturally been led to form a very indifferent opinion of the character of the profession, and consequently have placed the dentist in the same category with barbers and cutters of corns, &c. One word in regard to the prices. In nearly all the German cities they are regulated by law, and do not vary much in different places. The charge for extracting a tooth is twenty kreutzers, (about 14 cents); for "*plumbing*," from one to two florins (40 to 80 cents); cleaning is one and a-half florins; other operations are in proportion. So you see at once one of the great causes of the profession being so badly conducted. Another great hinderance is the absolute restriction of trade which one finds in most parts of Germany, all foreigners being prevented from embarking in any kind of business, and in no branch do the laws appear to be more rigid than in that of dentistry. But a

few days ago an unlucky English knight of the forceps, who was wielding his instruments without permission in Cologne, was suddenly informed by the authorities that it was necessary for him to invest about 300 dollars in the public funds of the place, and absent himself from society for two months, by taking lodgings in a small room, with iron bars at the front window and a military porter at the door. So long as the people of Germany do not open their eyes to see the injustice of their exclusive system, so long they should keep their mouths shut, in order to hide one of its most pernicious effects. Notwithstanding all those difficulties, I have for the last five months been pretty constantly engaged, and I find that most persons are willing to pay very fair prices for operations which they believe to be well performed."

CANCER OF THE TONGUE.—"Twenty cases, of which five were females—almost always in tobacco-poisoned mouths. This comes on at an earlier age than cancer of the lip."—*Bos. Med. and Surg. Jour.*

CARBONIC ACID GAS AS A LOCAL ANESTHETIC.—"Dr. Finnell then presented a *toe-nail* which he had removed, first benumbing its sensibility by the use of carbonic acid gas. The toe was placed in a large-mouthed glass jar, and the gas generated, first filling up the space between the toe and the jar by means of raw cotton. In fifteen minutes the nail could be bent and twisted without the slightest pain. The numbness extended to the little toe and the sole of the foot.—*(Extract from Report of New York Pathological Society.)*

NEURALGIA.—"Facial Neuralgia from uterine irritation is a very common affection of pregnancy. It generally affects the dental nerves, particularly those of the upper jaw. In many subjects, acute caries of the teeth occurs; and in some child-bearing women, a tooth or two is lost in each pregnancy. In neuralgia of the face, with or without disease of the teeth, a generous diet is called for, with wine and porter. Quinine and the lighter preparations of iron are very useful in such cases. Cold and damp, and residence near a river, or the neighbourhood of any large body of water, should be avoided as much as possible. Teeth ought only to be extracted with caution during pregnancy under such circumstances. The local application of chloroform, creosote camphorated spirit, nitric acid saturated with camphor, and other anodynes, scarification, or the application of a leech to the gum, are the best means of alleviating pain."—*Extract from Dr. Tylor Smith's Lectures; Lancet.*

TEMPERING STEEL TOOLS.—"Great care and experience are required in tempering tools, because they are so liable to crack when plunged into the cold water bath. When they are heated to the tempering point, which is known by their color—yellow for a hard and blue for soft temper—their surfaces should be rubbed over with a paste of prussiate of potash, before plunging them into the water. File makers draw their files, after they are taken from the fire, through the lees of beer or a mixture of salt and the hoofs of animals ground into powder, before they immerse them in the water bath. Some tool makers dip their tools in strong soapsuds, before plunging them into cold water. Steel rollers are tempered by heating them up to a red heat, then covering their surface with a paste of prussiate of potash, and placing them in the cold water bath. Steel rollers are very difficult to temper. The liability of steel articles to crack in tempering is owing to the sudden chilling and contracting of the molecules at the surface, while the interior molecules are still expanded and hot. To prevent this evil, the coating of the surface of tools with soap, grease, prussiate of potash, &c., before plunging them into the cold water bath, has been found successful in practice, but the reason why is not very well known."—*Scientific American.*

ACTION OF SUGAR ON THE TEETH.—"M. Larez, in a course of investigations, arrived at the following conclusions relative to the action of sugar upon the teeth:—1. Refined sugar, from either cane or beet, is injurious to healthy teeth, either by immediate contact with these organs, or by the gas developed while it is in the stomach. 2. If a tooth be macerated in a saturated solution of sugar, it is so much altered in its chemical composition that it becomes gelatinous, and its enamel opaque, spongy, and easily broken. 3. This modification is due, not to free acid, but to a tendency of sugar to combine with the calcareous basis of the tooth."—*Medical Times and Gazette.*

ANNEALING GOLD FOIL.—A correspondent in the "*Dental News Letter*" observes, that when gold foil is annealed by the manufacturer, very carelessly done, and when done most carefully (their way) by them, is cooled too quick and handled too much after annealing, as quick cooling and handling tends to harden it much. I will, therefore, give you my way of overcoming the difficulty. I have a small box made of sheet iron, about two inches square and one inch deep, with a close-fitting cover. I form my gold into the shape required for use (I generally use pellets), put them into the box, heat them to a bright cherry heat, and leave them in the box until cooled. This process leaves them very soft, and consequently very adhesive; more so than by annealing in any other way. At my first trial, I was much surprised at the improvement, and consequently much pleased. This is very simple—but my success has been such as to give me the idea that it might be of some use to those of the profession who may have had trouble with their foil also to those who cannot use sponge gold, and wish their foil more adhesive.

EXCESSIVE HEMORRHAGE AFTER EXTRACTION.—Miss A., a young woman, a domestic, in the family of Mr. B. from the South, taking rooms at the Tontine Hotel, called at my office to have a right superior second molar extracted. The gum was lanced deep in consequence of the tooth being much decayed on the labial surface. The fangs came out separately, a large ulcerous sac was attached to one of the roots. The bleeding was free at first, though not sufficient to attract attention. She immediately left the office, much pleased with the relief afforded by the operation. Two hours after she called again, saying her gums had bled much since she went away. I applied a pledgget of cotton saturated with an astringent lotion, and she left the office. In about an hour she returned, considerably agitated, her friends having told her they feared she would bleed to death. I introduced several pledggets of cotton into the socket saturated as before, and quieted my patient by assuring her she would receive no injury from the bleeding, not deeming it necessary to be more thorough, as there was nothing apparently unusual in the case, supposing it such as is frequently met with, and that the hemorrhage would shortly cease. About nine in the evening a message was left at my residence, saying my presence was required immediately at the Tontine. I was absent when the message came. On my return, I repaired to the Hotel. On entering the room I found the young woman lying upon a coach suffering from excessive hemorrhage. I forthwith repaired to my office for suitable instruments preparatory for subsequent operation. Having thoroughly washed the cavities, I filled the sockets with plugs of cotton saturated with a tooth lotion prepared from pulve, nut galls, and orris root, and taking care to press one pledgget hard upon the other and so on, filling each cavity, until the whole was completely filled. This together with a small piece of cork in place of the crown, I directed the patient to close her mouth, which brought the antagonizing teeth against it, thus forming a solid compress, and the operation was complete. The hemorrhage immediately ceased, and the patient was at once restored."—*Dental Recorder*.

LUXATION OF THE LOWER JAW.—"The luxations produced by M. Nélâton on the dead body, seem to have settled the question as to the cause of the fixity of the bone in its abnormal position. They decide in favour of the opinion first expressed by Hunauld, that this is due to the coronoid process—which, in the dislocation, is lowered and carried forward—coming in contact with the inferior part of the malar bone, near its junction with the superior maxillary. By fixity of the bone, however, we must only understand that it cannot be made to approximate the upper maxillary; for Hippocrates notices that the patient could depress the chin slightly, and M. Nélâton, with others, admits this fact. Astley Cooper appears to be the only observer who asserts that the patient can slightly elevate the chin. If this ever be possible, it must clearly be very rarely so; and, under the circumstances, the coronoid process must be lower than usual, and not in contact with the malar bone. M. Robert has reported the only case apparently on record of dislocation, *outwards*, of this bone. The dislocation was uni-lateral, the condyle on the left side being thrown out, there being, of course, a fracture of the bone on the right side."—*Charleston Medical Journal*.

MERCURIAL STOMATITIS—CHLORATE OF POTASH.—"M. Demarquay relates six cases in which chlorate of potash succeeded rapidly in curing the stomatitis arising from the action of mercury. In one case, where the mercury had been used for a syphilitic affection, two grammes of this salt, given for four days, removed the stomatitis, and on resuming the mercurial treatment, and conjoining it with chlorate of potash, salivation did not reappear. The harmlessness of the salt is well known. M. Gustin took eight grammes, but did not find the urine increased; a sense of constriction in the mouth and some roughness of the gums were produced, and although the saliva was not sensibly diminished, yet it appeared to him more liquid than usual. He has established the fact, that the chlorate is in great part discharged unaltered by the urine. When the salivation has recently commenced, two gramme doses suffice to check it; but when it is intense and fully established, the dose must be increased rapidly to five, ten, or fifteen grammes. He advises also the conjoined use of an astringent wash for the mouth."—*Med. Chi. Rev.*

SUBMAXILLARY FIBROUS TUMOUR.—"In a recent 'Mirror' we recorded a case of tumour of the neck, removed by Mr. Skey, at Bartholomew's Hospital, with success. An instance somewhat similar occurred in the person of an elderly female, who was admitted about four weeks ago under his care, with a tumour, the size of a small orange, situated on the right side of the neck below the angle and ramus of the lower jawbone. It had been growing only three or four months, and was smaller when admitted than at the time of its removal. In fact, it had increased rapidly since her stay in hospital, with some slight pain. Mr. Skey found it lying over the sublingual gland, and removed it with great skill. There was but little hæmorrhage, although one or two small arterial branches were unavoidably wounded. The wound was filled with charpie afterwards, as Mr. Skey is in the habit of doing. The patient is having a good recovery, which might have been anticipated, as the tumour was fibrous, or, as we should prefer to call it, fibro-cartilaginous. It is somewhat unusual that a tumour of this kind should grow so rapidly as in the present instance. Fortunately there is no evidence of malignancy about it."—*Lancet.*

ENDEMIC TETANUS.—"Dr. Stilwell contends that there is an endemic influence pervading the eastern end of Long Island, strongly predisposing to tetanus. Not only persons, but all domestic animals, excepting only the dog and cat, are subject to it. The frequent occurrence of the disease renders prophylaxis important; and he has not known an accident occur when punctured and contused wounds had been treated with tobacco and opium—the chances of successful treatment consisting in powerful sedative applications to the wound. He does not mention iodine applications, and believes little dependence can be placed upon active internal medication."—*Charleston Medical Journal and Review.*

At a lecture delivered by M. Grisolle, Paris, on the subject of "Anæsthetic Agents," he stated, that "all anæsthetics must be regarded as unsafe agents, and not to be prescribed except in severe cases, and by no means to be indiscriminately employed in trifling cases, such as extraction of teeth, &c."—*Edinburgh Medical Journal.*

REMOVAL OF TUMOURS.—"MAISONNEUVE having published cases in which he had removed portions of the upper jaw, in order to get at tumours in the pharyngial and zygomatic regions with success, now proposes to remove portions or the whole of the lower jaw, in order to get at tumours in the pharynx, tongue and palate; and says that the surgeon is authorized to operate, even where this bone is not diseased (taking out one-half or any portion of it), when the disease endangers the life of the patient."—*Phila. Med. and Surg. Journal.*

SYMPATHETIC IRRITATION.—We copy the following remarks of Mr. J. C. Foster, on this subject:—"Every surgeon must have been frequently struck with the anomalous diseases of a purely sympathetic character to which children are liable; diseases arising simply from irritation, yet assuming frequently a very serious aspect; every one, indeed, must have observed how the irritation of a tooth, or undigested matter in the bowels, gives rise to the most apparent cephalic symptoms, and the mere removal of the former is the means of immediately restoring the child to its natural health."—*Med. Times and Gazette.*

CHLOROFORM.—At a recent meeting of the Boston (U.S.) Society of Natural History, the following proceedings took place, showing the effects of chloroform upon the human system:—Dr. C. T. Jackson exhibited a phial of blood taken from the heart of a woman who died from the effects of chloroform, inhaled at a dentist's office in this city. Dr. Jackson stated that the blood of this woman had lost the property of coagulation, was of a peculiar dark cranberry red colour, and quite uniformly liquid. The red blood globules, in a microscopic examination made by Dr. Bacon, were found to be a little shrunken and distorted; the white globules, were also deformed. At the autopsy, no morbid appearances of any kind were discovered in the brain or spinal chord, the later of which was particularly examined in the portions which give off the respiratory nerves. The lungs were of a peculiar dark red colour, and much congested with blood; but still crepitating on pressure, or when cut into. No organic disease was found in any of the viscera, and it was the opinion of all the physicians present, that the deceased came to her death from the effects of chloroform. Dr. Jackson's particular duty in this examination was to investigate the chemical condition of the blood. He had ascertained that it contained *formic acid*, which was readily separable by distillation of the blood by the heat of a chloride of calcium bath. The formic acid, separated, had its peculiar odour, and instantly decomposed nitrate of silver, reducing the silver to its metallic state, so that large flakes of the metal were obtained. The observation that chloroform was decomposed by the blood, with the production of formic acid, he believed to be new; and it must be regarded as an important physiological fact of no small practical moment. Three atoms of chlorine leave the formyle to combine with the blood while three atoms of oxygen are abstracted from the blood to unite with the formyle in the production of formic acid. Thus the blood is not only deprived of its oxygen, but it is so altered as to be incapable of absorbing air, and the patient dies from asphyxia. Such appears to be the probable theory of the cause of death in this case. It becomes us to inquire whether there is not always a partial decomposition of the blood effected by the inhalation of chloroform, from which, in cases where it is not carried too far, the system recovers; while a more complete change results in death. There is still much to be done in the chemical and physiological investigation of this subject. Dr. Jackson was of the opinion, that when chloroform must be administered, it should be diluted with ether; but the latter agent alone is a much safer anæsthetic, and should always be perferred when it can be obtained; for no death is as yet known to have been produced by its proper administration mingled with air; while chloroform, in spite of all proper precautions in its administration, has destroyed life. The chloroform inhaled in this case was found to be perfectly pure.

WESTMINSTER COUNTY COURT, Jan. 13th.

[Before — BAILEY, Esq., Judge.]

PERKINS *v.* PULLING.

Plaint to recover £8 1s., the balance of a sum of £12, agreed to be paid by defendant's wife for an upper piece of artificial teeth, &c.

Mr. Buchanan appeared for the plaintiff, and in stating the case, explained that defendant's wife had been strongly recommended to consult Mr. Perkins respecting the loss of certain teeth, by a friend who had herself received benefit from that gentleman's advice, as had many of her acquaintances to whom she had recommended him. This lady he should call as a witness, and also two dentists, who would prove that the teeth constructed by his client for defendant's wife, were properly made and adjusted.

It was agreed between the plaintiff and Mrs. Pulling, that the deficiency of teeth should be supplied for £12, out of which £5 had been paid; but in consequence of two pairs of springs being spoilt by Mrs. Pulling, an extra guinea had been charged, making the balance due £8 1s.

When the case was completed, Mr. Perkins explained that a little inconvenience would probably be felt at first, she (the patient) never having worn anything of the kind before; subsequently she called several times upon plaintiff, stating that she could *speak perfectly* well, but could not eat with them, it being perfectly clear by her own admission that she always took them out at meals; upon which, plaintiff informed her that as long as she continued to act in that manner, she certainly never would be able to eat with them. In the course of conversation, during these visits, Mr. Perkins was repeatedly asked to call upon her, at her husband's house, and moreover, he was solicited to give her husband, the defendant, who is a tailor, an order for a "garment," as that would make the debt so much less; this his client declined, and upon the case being completed to his satisfaction, Mr. Perkins requested payment of the balance of the sum agreed for, but having failed to obtain it, he, as a last resource, summoned the defendant to this Court. Mr. Buchanan then called the wife of defendant, and an examination elicited the main points of the case explained in his opening address. Witness admitted agreeing for the price, and stated that she had worn the teeth ever since they had been made, and that she was then speaking with them in her mouth. She had not consulted her husband previous to giving the order for the teeth, but had told him afterwards, but when asked by him what she was to pay for them, she had told him an untruth. The five pounds she had paid out of her housekeeping money.

Mr. Buchanan to Mr. Perkins: Were you invited by witness to call at her husband's house?—Yes, repeatedly.

Mr. Buchanan to his Honour: I think the liability amply proved, and I need say no more.

His Honour: Not to my satisfaction, it is a nonsuit.

Mr. —— for defendant: The husband denies all knowledge of the transaction.

His Honour: The plaintiff must be nonsuited.

The counsel for defendant then asked his Honour for costs, which he immediately granted, as also the expences for two witnesses. The case being disposed of, the following conversation took place:—

Mr. Perkins: Will your Honour be kind enough to tell me how I am to obtain redress.

His Honour. I can't tell. That's the law.

Mr. Perkins: But surely it is a strange law that makes the husband irresponsible for his wife's acts, and the wife irresponsible for her own?

His Honour: The law says, and very properly, that the husband shall not be responsible unless consulted. A woman might go to the neighbouring shops and get a new dress every day, but her husband would not be called on to pay for it. You had the remedy in your own hands, you should have asked the husband first.

Mr. Perkins: But it is contrary to all practice to consult the husband in such a case; besides, a woman although able to get a new dress every day, could not obtain a set of teeth so often. I think at any rate, if the law makes the man irresponsible for his wife's acts, she ought at least be made responsible for her own.

His Honour: I cannot argue the case with you. You had better address your remarks to the Legislature, and not to me.

Mr. Perkins then retired.

We trust that the law laid down by the learned judge of the Westminster County Court, is only "Crowner's Quest Law," for otherwise no one is safe in taking an order from a married woman, without it receives the fiat of her husband.

Reviews.

The Dental Profession: its Recent Position and Future Prospects considered in relation to the Recent Reformatory Movement. By SAMUEL LEE RYMER. London: Walton and Maberly, 28, Upper Gower-street, and Ivy-lane, Paternoster-row.

THIS is an exceedingly valuable *brochure;* and one which should be on the table of every dentist in the kingdom. "Know thyself," is a sound maxim: and Mr. Rymer has afforded to the dentists of England an opportunity of professionally working it out. In a pamphlet of thirty-two pages, he has given a succinct history of the dental profession as it had been during the half century that preceded "the recent," or rather the present great movement, which has, no doubt, formed the turning point in dental annals.

Mr. Rymer, in his opening pages, thus forcibly puts the case of his profession:—

"From the great prevalence of disease in the teeth, and the sad consequences of such disease, the speciality of *dental surgery* has assumed an importance second to none. Closely allied to medicine and surgery, it should never be practised except with a knowledge of their general principles, and an accurate and complete acquaintance with the parts to which it has reference. Insomuch, dental surgery resembles other specialities. But the dentist has duties to fulfil in addition to those of alleviating pain, and staying the ravages of disease in the dental organs. Even when all has been done that skill can accomplish to preserve the teeth, they will sometimes be lost. In such cases, who shall say how much the dentist contributes to restore and maintain that greatest of all blessings—health, by *mechanical means*. The science of dental mechanics is, in truth, an interesting one, not alone as a triumph of ingenuity, but for the large amount of comfort it affords to so many thousands of the community.

"Here, then, is a profession whose legitimate members must be possessed of a knowledge of anatomy and surgery, and who must further be mechanically ingenious; the peculiarity of the calling also demanding kindliness of feeling and gentlemanly deportment. It is strange that such a profession should never have been *organized* in this country. True, the number of its members until of late years has been comparatively small; not so small, however, as to have rendered organization impossible years gone by. But as it is useless to dwell upon what *might* have been done by the last generation, and it may be advantageous to chronicle what *has* been done by the present, a faithful record of the recent movement in the profession, to place it upon its proper basis, shall follow without further preface."

The writer does not altogether ignore the reformatory movements of former years. He, however, dismisses them—and very properly too—in these summary terms:—

"Some years ago, several abortive attempts were made to establish a society of dentists. At last, a sort of club was brought into operation, which has not

very long expired; but as eating and drinking formed an important part of the business of its members, it will not tend to elevate the profession in public estimation to dwell upon their proceedings. In justice, however to the profession as a whole, it should be remarked, that the members of this club formed a very small and exclusive fraction of its body."

Coming nearer to the present time, Mr. Rymer observes:—

"During the years 1854 and 1855, the profession appeared to recognise the importance of organization, and a general desire seemed prevalent that some means of intercommunication of ideas should be established. Professional brethren discussed the matter amongst themselves as opportunities offered; but practical measures were acknowledged difficult to be put into operation."

The present movement commenced by the publication, in the *Lancet*, of the 25th August, of a letter from Mr. Rymer himself. In this letter, the writer showed what had been done in America, and suggested the establishment of a Dental College in England. This, and subsequent proceedings, which mainly led to the accomplishment of the great fact, the formation of the College of Dentists, are referred to by Mr. Rymer in terms of becoming modesty. He was a chief actor in them; and his name shall be for ever identified with the elevation of his profession. However, the same feeling that actuated him in bringing together the memorable assembly of the 22nd September last, still characterises all his acts, and is evidenced strongly in the pamphlet before us. His object is not self, nor self-laudation, but the weal of the honourable body of which he is so talented a member; and accordingly, every line of his present paper is *ad rem*.

Mr. Rymer follows up the details of the movement; comments with considerable, though not undeserved severity, on the "secret" proceedings of the few gentlemen who petitioned the College of Surgeons; shows the connexion between the petition and the Odontological movement; and concludes, by proving that the Dental profession can obtain its desideratum—an independent existence—only through an incorporated College of Dentists.

We were tempted to make a number of other extracts from the pamphlet; but we do better towards our readers by telling them to buy the work itself, and peruse every line of it.

Obscure Nervous Diseases popularly explained. By J. L. Levison.—Effingham Wilson.

THE pursuit of specialities in medicine and surgery, is one of the features of the present age, and has been productive of the greatest and most satisfactory results. Where a practitioner's attention is devoted exclusively to one branch of his profession, his experience must neces-

sarily be larger, and his opinion more valuable than when extended over the whole field. This unpretending little volume of Dr. Levison is an instance in proof. It consists of six letters addressed to Dr. Conolly. In speaking of nervous diseases, the doctor says:—"The cause may either be in the brain, in the nerves of the spine, in morbid conditions of the organs of digestion, respiration, or circulation; and lastly, in the mouth." The most difficult to diagnose are those of the mouth, and to these our author's attention is devoted in the work before us. After glancing in a rapid but clear manner at the normal condition of man, the results of exclusive physical training and extreme mental culture, the doctor gives a popular explanation of reflex nervous action, and proceeds by remarking on the relation of the organs of the mouth, with the spinal nerves, brain, arteries, and heart:—"The masticatory organs hold an intimate sympathy with the mucous membranes, by a tenure inherited at the very germ of their existence; mucous follicles with the heart, and vascular system from the teeth, being supplied with blood by the external carotid arteries with the brain and the external senses; by the dental nerves originating at the base of the brain, and with the spinal nerves from an intimate tension of their nervous fibres with the latter. We would call especial attention to the principles laid down in the two letters, by which a correct diagnosis may be formed in these cases. The intimate relationship between the various forms of nervous disease and dental irritation, is shown in a series of cases which have come under Dr. Levison's care. When we reflect that the tri-facial or fifth pair of nerves are intimately connected with the spinal nerves, we perceive at once that affections of distant parts of the body may be readily traced to disease in the teeth.

Deafness, glandular enlargement, hemicrania, tic-douloureux, convulsive action of the muscles of the face and neck, paralysis, catalepsy, and epilepsy, are shown in many cases to have been produced by a diseased condition of the buccal organs. We understand that Dr. Levison has retired from dental practice, and confines himself exclusively to the treatment of these diseases; and we cannot but congratulate the profession upon possessing among its members one so competent to act as a pure consulting dental surgeon.

Mysteries of Medical Life; or, Doctors and their Doings, &c. By GEORGE ALLARTON, M.R.C.S. and L.A.C., &c. Balliere, Regent Street.

THIS little work, dedicated to "the doctor-loving, doctor-hating, doctor-cheating, doctor-patronising, and doctor-abusing public," is a production displaying talent of no mean order in its author, who has succeeded in

describing the various grades of professional life to the greatest perfection. The aim of the book is most praiseworthy: it is to bring to light the characteristics of true MERIT in medical men, and to compare them with mere external and surface appearances of worth, and thus to furnish the public with a guide to direct them in their choice of professional advisers.

Memoirs sur Quelques Points Fondamentaux de là Médecine Dentaire. By A. F. TALMA, M.D., &c., Dentist to the King of the Belgians, &c. Brussels, 1852. London: Balliere, Regent-street.

WE feel an especial pleasure in directing the attention of our readers to the above work, not only because it is a valuable addition to the literature of the Dental Profession, but also because a copy of it has been presented to the "College of Dentists," accompanied by *l'hommage de l'auteur.*

We reciprocate such kindly feelings and sympathy towards the College in one who, by his writings and practice, has obtained such pre-eminence in the profession, and whose fame is European. Monsieur de Talma has, for many years past, advocated the question of Dental education and reform, and with reference to this important subject, observes:—

"Common opinion is unfortunately accustomed to regard too much the dental art as a mechanical profession placed beyond the rules of general medicine, and limiting exclusively its duties to certain manual operations to remedy defective arrangements of the teeth, or to various material alteration of their substance."

The author demonstrates the vitality of the teeth by anatomical facts, and shows that this vitality connects the science of dentistry with that of medicine. If such vitality did not exist, it would only require the art of a mechanician to treat the most difficult and complicated cases in dentistry, but this vitality being thoroughly proved, it is quite impossible to separate the surgical from the mechanical part of dentistry. Many great men deny that the teeth are organic bodies. But if they be not, how can we account for their organization and disease with the general constitution of individuals—the influence of climate and of regimen on the teeth—the destructibility of the teeth from constant use, like that of artificial sets from chemical causes?

It is by this fundamental principle, viz., the vitality, that the dentist is able to prescribe such remedies as are really useful.

We would beg to recommend this book to our readers, as it is full of sound good sense; it is evidently written by a man who thinks for, and is devoted to the raising the standard of the dental profession.

BOOKS RECEIVED FOR REVIEW.

Mysteries of Medical Life. By G. Allarton, M.R.C.S.

The Performance of Operations on the Teeth without Pain. By S. A. Parker.

The Dental Profession: its Present Position and Future Prospects Considered relative to the present Reformatory Movement. By Samuel Lee Rymer.

Obscure Nervous Diseases Popularly Explained. By J. L. Levison.

Notices to Correspondents.

Letters will not be inserted in this Journal unless authenticated with the name and address of the writer—not for publication, but as a guarantee of good faith.

R. W.—The anonymous correspondent signed "Ajax," is a person of the name of *Spence Bate*, formerly of Swansea, but now of Plymouth.

Dr. Williams.—We are obliged for your suggestion, which will be strictly adhered to.

Mr. R. Westwood.—Avoid a controversy with the party named.

F. R. C. S.—We have found creosote and tanin the best application for the purpose.

Mr. W. Simpson.—Mr. Harding first introduced the application of the actual cautery by means of the galvanic battery.

Odontologists.—The gentlemen can become members of the College of Dentists, by being proposed and seconded. We feel assured no objection would be raised to their admission.

An Associate.—In cases of double hair-lip, when the fissure is not confined to the skin, the pre-maxillary bones on each side are not united, and after an operation, if this portion of the jaw be examined, it will be found to contain the capsules of the four incisor teeth.

F. C.—Mr. Hill, the Secretary, will answer the question.

Mr. Cleandon's "Introductory Lecture on Dental Surgery" came too late for insertion in the present number. We hope he will have forwarded his second lecture before we go to press with our next number.

A Passive Member.—By referring to the contents of the present number of the Journal, you will find that your enquiries are fully answered.

Amicus Curiæ.—We believe your information to be quite correct, and that the Council of the College of Surgeons has declined to entertain the petition of the eighteen.

Forward (Birmingham) is thanked.

Communications and letters have been received from Dr. Levison; Mr. Jacob (Bridgewater); Mr. Parker (Birmingham); Messrs. Fowler and Preterre (Paris); Mr. Purland; Mr. Bate (Brighton); Mr. Donaldson Mackenzie; and Mr. James Robinson.

All Communications intended for insertion in the next number of this Journal, as well as Books for Review, &c., should be addressed to "the Editor," at the Publishers, Walton and Maberly, Upper Gower-street, New-road, on or before the 1st of June.

With the Publishers' Compliments

J. P. B.

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OF

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Advertisements for next number will be received up to the 20th September.

GENERAL DENTAL DEPÔT.

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THE

QUARTERLY JOURNAL

OF

DENTAL SCIENCE.

COLLEGE OF DENTISTS.

MONTHLY MEETING, APRIL 7.

The usual Monthly Meeting of the Members and Associates was held this evening; the President in the chair. The rooms were much crowded, and very great interest was manifested in the proceedings.

Mr. C. J. Fox read the following list of contributions to the Museum, received since the former meeting:—

Specimens of early manufacture of mineral teeth.—Presented by A. Hockley, Esq. 42, Gerrard-street.

Skull of Walrus.—Presented by J. Harley, Esq. 23 A, Davies-st.

Skull of Tortoise—Presented by Jabez Hogg, Esq. M.R.C.S.

Skull of a young Tiger.—Presented by Jabez Hogg, Esq. M.R.C.S.

Lower right maxillary Bone of a Cat.—Presented by Samuel Lee Rymer, Esq. Croydon.

A new excavating drill.—Presented by H. L. Jacob, Esq. Bridgewater.

Two specimens of native corundum.—Presented by Messrs. Pratt & Fletcher, Piccadilly.

ELECTION OF MEMBERS.

The following gentlemen were elected Members of the College:—

C. D. Roberts, Esq. . . .	Ramsgate
J. Karran, Esq.	Douglas, Isle of Man
G. F. Lloyd, Esq. . . .	Leicester
J. J. Keene, Esq.	Boulogne-sur-Mer
J. K. Chisholm, Esq. . .	Edinburgh
C. W. Shew, Esq. . . .	Bristol
J. Thwaite, Esq.	Bristol
W. W. Webb, Esq. . . .	Southampton-street, Bloomsbury
D. D. Hepburn, Esq. . .	Nottingham
G. Bowmer, Esq.	Nottingham
S. Ghrimes, Esq.	Gloucester-place, Portman-square
B. Murphy, Esq.	Bruton-street
J. Orrach, Esq.	Edinburgh
W. Williamson, Esq. . .	Leicester
F. W. Sass, Esq. . . .	Manchester-street
J. Orrach, Jun. Esq. . . .	Nottingham

The following gentlemen were also elected Associates:—

D. Hepburn, Esq. . . . Davies-street

S. Cocking, Esq. . . . . Grafton-street, east

Mr. Turner wished, before the ordinary business of the meeting was gone into, to call attention to "the declaration," which Members of the College were required to sign. He considered this declaration objectionable, and wished to take the opinion of the meeting on the subject.

Mr. Adam Thomson and Mr. Rymer directed Mr. Turner's attention to Law xiv. of the College, which would inform him that it was competent to any member, on requisition, containing the signatures of ten members, to require the Council to call a Special General Meeting. At such Special General Meeting, the matter brought forward by Mr. Turner could be taken into consideration; but the present was an ordinary monthly meeting, and Law xvii. prevented them from making any alteration in their laws or constitution, except at a general meeting.

The President ruled in favour of the view taken by Messrs. Thomson and Rymer.

Mr. Underwood then read the following paper on

THE TREATMENT OF THE EXPOSED AND DISEASED DENTAL PULP.

Mr. President and Gentlemen.—The object of our meetings being self-improvement, inter-communication of ideas, and the laying before our members the results of our own individual experience, justifies us in considering no subject connected with our special branch of surgery, as otherwise than interesting. I trust, therefore, you will not consider the time misspent, in listening to a few remarks on the treatment of the diseased dental pulp, and periosteum. In these days the object of the surgeon is preservation, not extirpation. The removal of any part of the body has justly been called the Opprobrium of Surgery; and no class of surgeons have devoted more time and research to avoid this, than dentists. A few years ago, and every aching tooth was instantly extracted; no attempt was made to preserve the organ, or if made, it was by the patient himself, in the hope of deferring the dreaded alternative. The plugging of teeth was restricted to those cavities, where the pulp was not exposed, nor the dentine sensitive; but such have been the rapid strides made by our Profession within this time, that no honest Practitioner

will now remove a tooth, if he thinks there is even but a slight chance of saving it: and this he must do in spite of every obstacle thrown in his way. It is often a thankless and non-remunerative task; the time taken up in preparing the tooth for plugging is not paid for by a usual fee; and the patient himself is often apt to grumble, at so much time being taken up to save a tooth. This is especially apt to be the case with a young practitioner; but let him only determine that no temptation shall induce him, to depart from the golden rule to do the best his acquirements and judgment lead him to for his patient, and most certainly he will eventually attain, not only large practice, but a high and an honourable name.

The parts of the teeth possessing nervous sensibility, are the pulp, or as it is more generally termed, the nerve, the periosteum, and the fine membrane, situated between the enamel and the bone. Mr. Tomes considers the sensibility of this part of the tooth, to be owing to the fibrils in the dentinal tubes; he says, the greater degree of sensitiveness observable in the dentine immediately below the enamel, that is at the point of ultimate distribution of the dentinal tubes, and consequently of the fibrils, may be fully accounted for, on the supposition that the latter are organs of sensation.

No doubt the nervous filaments passing through the tubuli or else through the inter-cellular substance (for grave doubts have been thrown on the tubular structure of the tooth), form a plexus under the enamel which is highly sensitive; every practitioner knows that in excavating some teeth, there is no pain whatever felt on introducing the instrument, even into the pulp cavity itself; but a sharp pang is experienced immediately we touch the spot where the dentine and enamel come in contact; the sensibility however of this membrane, need not interfere with plugging the tooth; no ill effects will follow it. That which is toothache in the general acceptation of the word, proceeds from actual exposure of the dental pulp, and is characterized by acute and violent pain; a portion of food, or any foreign substance, entering the cavity, and coming in contact with the pulp, any thing very hot or cold—in fact, exceeding in either of these respects the natural temperature of the mouth—immediately produces a paroxysm of pain along the whole course of the dental nerve extending up the head, fever, and general constitutional derangement.

There are three modes of treatment open to us in these cases. Should the affected tooth be one of the incisors, or canines, the pulp may be removed either by a five-sided broach, or by pushing a

straightened fish-hook up the cavity: give it a half turn, and withdraw it quickly, and in nine cases out of ten you will bring the nerve with it. The bleeding may be stopped by the application of camphorated spirit; after which remove all the carious bone, dry out the cavity, and plug at once. The second plan is to destroy the nerve entirely; the third, to render its exposed surface insensible. There are several escharotics useful for this purpose. An escharotic is a substance which, applied to living tissue, produces an eschar or crust of disorganized animal substance. The first I will draw your attention to, is arsenic. In modern times, this agent was introduced into dental practice, by Dr. Spooner, of Montreal, whose brother, Dr. J. Spooner, of New York, first made it known to the Profession in a treatise published in 1836; and for a few years after its introduction, it was used in this country and in the United States to the exclusion of almost every other remedy. The action of the arsenious acid is somewhat peculiar; its effect is rather to destroy the vitality of the tooth structure, and to cause its consequent destruction, than to form an eschar. The mode in which it is most generally used, is to apply the sixteenth or twentieth of a grain, with an equal quantity of the acetate of morphia, taken up on a small dossil of cotton wool, moistened in creosote, spirits of wine, or eau de cologne, to the exposed pulp, from which as much of the carious bone as possible should have been removed: great care must be exercised in closing the mouth of the cavity with a piece of modelling wax; as should the arsenic come in contact with the gum, an ugly sloughing sore may be the result. It is advisable to apply it to but one tooth at a time; if however this cannot be prevented, and you have to use it to several teeth, the patient should be cautioned against swallowing the saliva. It is not positively necessary that the pulp should be exposed, as this agent readily, and speedily penetrates the dentine; as a general rule it should be removed after six or eight hours, when the whole of the pulp may be extirpated, without pain. The cavity should then be well syringed out with warm water, and left open for a few days; after which it should be kept stopped for a week or two, with cotton wool, steeped in equal parts of spirits of wine and the aromatic spirits of ammonia, a fresh dressing being put in two or three times a day: this may be easily done by the patient himself. As long as any unpleasant smell is perceptible on the dossil of cotton, or the tooth feels tender on being pressed into the socket, it is unadvisable to plug it; when these symptoms have passed away, we may then

proceed to fill the tooth, introducing the gold as far up the pulp cavity of the fang as possible. Practitioners were apt at first to be much charmed with this agent, its effects are so immediate and so unmistakeable. The tooth which but yesterday was the seat of the most excruciating pain, is to-day literally a dead substance in the mouth: but if we wait a day or two after the tooth is plugged, we find that the periosteum which covers the fangs of the teeth is affected. In the great majority of cases in which arsenic has been used to destroy the sensibility of the teeth, we have periostitis, or inflammation of the periosteum, running into alveolar abscess. The periosteum being highly injected, is thickened; the result is, that the affected tooth is elongated beyond its fellows, and in closing the mouth the opposing teeth come sooner in contact with it, producing a dull heavy throbbing pain; eventually puss is secreted, and we have well-defined alveolar abscess: or the matter exudes generally from the surface of the inflamed periosteum, and discharges itself at the neck of the tooth, in which case there is general soreness and puffiness about the gum, and on rising in the morning a slightly saline taste in the mouth. Arsenic should not be used when the patient is very young, the absorbents being active, and the tissues highly vascular, nor in teeth where the enamel is very transparent, indicating a delicate and highly-organized structure. We should bear in mind, that by this escharotic we are creating a diseased condition in the pulp and tooth; we are not merely rendering the nerve insensible, so as to enable us to plug the cavity effectually, but we are positively destroying it, and in doing so we give rise to increased vascular action and all its attendant evils. I do not go the length of some writers, who lay it down as an axiom, that we must on no account use this agent; but I do say, and I am satisfied the experience of my brother practitioners will bear me out, that in the great majority of cases where it is employed, in a few months' time we have periostitis, the plug has to be removed, and in all probability ere long the tooth shares the same fate. That a morbid condition is developed in the tooth does not admit of a doubt. Remove the pulp to which arsenic has been applied for eight or ten hours, and you will find it highly injected, and altogether abnormal in its appearance.

If, as Dr. Westcott fairly says, this morbid action extends to the point of the root, there is no guarantee that it will not extend through it, so as to affect the parts exterior to the root; that is the peridental membrane and the periosteum of the alveolus. There can

be no question, that for simply destroying a nerve, this is the most effectual and least painful agent; but when our object is the preservation of the tooth, in the present state of our experience it is very questionable. In America, where it was first used in dental practice, it has been almost entirely given up; in this country, unfortunately, up to within the last few months, dentists were so completely isolated, that it was almost impossible to obtain the results of each other's practice; but amongst my own friends I know that it is now but seldom employed.

The arsenite of cobalt is used in many cases with more safety than arsenic; the quantity of the arsenious acid it contains being small. A little of the powder should be sprinkled on a piece of softened wax, which should be pressed into the cavity, and brought into contact with the exposed pulp, or it may be applied on a dossil of wool, the mouth of the cavity being sealed up with wax. The dressing should be removed after six or eight hours, and the tooth treated as in cases where arsenic has been employed; but here we are likely to have similar though less severe future periosteal inflammation.

Tannic acid, or tannin, a vegetable acid, obtained chiefly from nutgalls, has a strong affinity for albumen and gelatin, and its *modus operandi*, when applied to an exposed pulp, is, that it instantly unites with the albumen, and converts the surface of the pulp into a kind of leather covering, or cap, which protects the under surface from further injury or contact with any foreign substance. Upon this we may proceed to stop a tooth; the pulp in this case is not destroyed, but retains its vitality; the tooth is not a dead substance in the mouth, and consequently not so liable to periosteal inflammation; its normal functions are still carried on; when the nerve is not exposed, but where we find excessive sensibility of the dentine, tannin will be found a very valuable agent, as it at once coats the walls of the cavity with an insoluble compound, and destroys their sensitiveness. Some use it in the state of powder, but I prefer a solution in water or spirit—the spirit solution is perhaps the better.

Chloride of Zinc has been very largely used as an escharotic. It is soluble in chloroform, spirits of wine, ether, and water. In solution it is more prompt in its action, and also less painful; as with tannin it has a strong affinity for the albumen of the tooth, and when in contact with the dentine it is decomposed, and gives off chlorine, and thus acts as an antiseptic. In using this escharotic the tooth

should be plugged two or three days after its application: if we wait longer we are likely to find the sensibility of the tooth again excited.

Creosote forms a coating on the surface of the pulp, and restores its healthy action. It may be dissolved in alcohol or ether; but its effects are not so satisfactory as with some of the other agents mentioned; its antiseptic properties are very marked, and render it a useful aid to us where there is a secretion of puss. In such a case, by keeping the cavity dressed for a time with it, we may often plug a tooth which would otherwise have been lost.

The nitrate of silver is also superficial in its action; the strength at which it should be used is a grain, or a grain and a half, to a drachm of distilled water: some dentists use the nitrate in its solid state, but I prefer the solution; it is more convenient for application. The cavity should be carefully dried out before introducing the dossil of wool, and the dressing should be renewed three or four times a-day. Your patient, if tolerably neat-handed, may do this himself; but you should impress on him the necessity of drying the cavity perfectly before introducing the nitrate. The formula given will be found very satisfactory; it is one of the safest remedies we can use for the purpose.

Four or five grains of recently-burnt quick lime, mixed with a grain of morphia, is a very certain excharotic. A little of the powder should be taken up on a piece of wool, and placed on the pulp, and the cavity closed with wax: this should be removed the next day; and if any tenderness remain, apply it again; if not, apply the alcoholic dressing for a few days, and then plug the tooth. The dressing which for the last few years I have most generally used, and on which I place most reliance, is a strong saturated solution of camphor, the strength a drachm and a half of camphor to two drachms of spirit. The anodyne effect of the camphor is very marked, and though the remedy is longer in effecting its work than some of the others, it is decidedly safer. The patient should be ordered to change the wool three or four times a-day. At first a complaint will probably be made against the taste of the camphor, but this will soon pass away. On an average, after two or three weeks, the tooth will bear excavating, and the exposed part of the pulp be insensible, and we can plug the tooth. By using this agent there will be no ill effects, the vitality of the tooth will still remain, its condition be healthy, and we shall have a permanently-useful, instead of a dead organ in the mouth.

The actual cautery may often be used with great success in instantly producing an eschar, and in a few days the tooth may be plugged. The battery invented by Mr. Harding, Member of the College, and manufactured by Mr. Coxeter for this purpose, is very convenient; you apply the wire to the pulp, unheated; by touching a spring contact is made, and it is instantly at a white heat: care should be taken not to wound the internal part of the pulp. You will find this in many cases preferable to some of the more powerful escharotics: for myself, however, I infinitely prefer the nitrate of silver diluted, or the solution of camphor. We more frequently meet with ossification of the pulp from the application of the actual cautery than from any other escharotic; this process of ossification goes on after the tooth is plugged, and where it is confined to the portion of the pulp in contact with the gold, helps to render the operation more successful. In conclusion, allow me to say that I have only drawn your attention to those local remedies which I have been in the habit of using, and of whose action I could speak with certainty: the constitutional treatment would have caused me to trespass too long on your time.

The degree of sensibility existing in the pulp and dentine, and the constitutional peculiarity of the patient, must be our guides in the selection of our remedy; we must, in some cases, be prepared for failure; but with patience and perseverance, joined to discrimination, many teeth, which would otherwise be lost, may, by the use of one or more of the escharotics be preserved: we may rest assured, that our time will not have been misspent if we can but preserve a tooth; and, sooner or later, the dentist will receive that meed of praise to which he has so justly entitled himself.

We are, as yet, in the infancy of Dental Therapeutics, but the present movement in the profession is widening the field of our knowledge; and, if with heart and soul we adhere to the work before us, our country will soon stand in this, as she does in other branches of medicine and surgery, second to none. *(Much applause).*

Mr. Purland had found filling the cavity of the tooth with lint soaked in a solution of the extract of hyoscyamus, a mode of treatment that was generally successful in speedily preparing the tooth for permanent stopping. In many instances, the patient was able to have the tooth plugged the day after the henbane was applied; but the applications had seldom to be continued for more than two or three days.

Inflammation of the nerve was sometimes reduced by filling the mouth with burnt brandy—brandy which had been allowed to flame for about half-a-minute.

Mr. MACKENZIE had found a grain of morphia, dissolved in mastic and mixed with a little chalk and plaster of Paris, an admirable application. When put into the cavity of the tooth, it prepared it for stopping in a few days.

Mr. R. HEPBURN's experience did not enable him to agree with Mr. Purland and Mr. Mackenzie, in thinking that the cure of toothache was so simple a matter, and one so speedily accomplished, as these gentlemen's observations would seem to imply. He had known several cases in which two or three years were occupied in preparing the tooth before a permanent cure could be effected. He had found chloride of zinc, one of the preparations referred to in Mr. Underwood's able and interesting paper, a very satisfactory application.

Mr. JONES's experience showed, that in cases of inflammation of the nerve, some grains of paradise mixed with twice its bulk of spirits of wine, and half the quantity of rum, the older the rum the better, gave instantaneous relief to the patient.

Mr. SPENCER had tried, with very successful results, in cases of toothache, a preparation composed of one drachm of creosote, and half a scruple of acetate of morphia, applied with a little acetic acid. Collodion, or pure gutta-percha dissolved in chloroform, and applied with a camel's-hair brush, formed a good covering before a tooth was stopped.

Mr. PERKINS thought that when an escharotic was employed, quick lime was about the best agent; a preparation of twenty grains divided into four parts, and applied morning and evening. When this did not succeed, nitrate of silver might be used. He however believed, that in thus saving teeth, the deprivation of a portion of the vitality of these organs, caused by the use of escharotics, made them more liable to disease in future.

Mr. FOX thought a preparation of chloroform and opium—two drachms of the former to one of the latter—a good one. When stopping a tooth, he had, in cases where a vent appeared to be an advantage, inserted a small tube into the capping; and then stopped all round this tube.

Mr. TURNER could have wished that to his other very interesting observations, Mr. Underwood had added some details as to a constitutional mode of treatment of the teeth. A paper on this subject

from Mr. Underwood, or some gentleman of equal experience, could not fail to be of value to the members and associates.

Mr. UNDERWOOD.—Gentlemen. I am much obliged to you for the very kind manner in which you have received my paper *(applause)*. I can assure you, I felt much interested in the discussion to which my observations gave rise.

I shall now briefly notice the suggestions of the gentlemen who have discussed the subject of the paper. Mr. Purland recommended hyoscyamus. Now I used it; but not with such success as should induce me to join in approving of its application. The preparation referred to by Mr. Mackenzie is what is generally known as the anodyne cement, and is more of a palliative than an escharotic. Mr. Hepburn's remarks had reference to chloride of zinc, and of this I have already spoken. Mr. Jones has told us of a preparation that he is in the habit of using; and Mr. Spencer has spoken of collodion, and also of gutta-percha dissolved in chloroform: now I find asbestos to answer very well for this purpose: but what I would seriously recommend you to try, if you have not tried it, is a thin shaving of cow-horn, placed over the pulp after the escharotic has been used. You will find this an excellent non-conductor *(applause)*. You have heard Mr. Perkins's opinion on the use of escharotics. Mr. Fox has spoken of the insertion of a tube from the capping over the pulp. I certainly have a very great objection to this mode of treatment. In a case where the inflammation of the periosteum was very aggravated, my partner, Mr. Robinson, drilled a hole, two or three lines above the neck of the tooth into the pulp cavity. This was some three years ago; and this operation up to this time appears to have been highly successful. Mr. Turner expressed a wish that I should offer some remarks on the constitutional treatment of the teeth. I should occupy too much of your time, did I enter on that important subject on the present occasion; but should the members so desire, I shall be most happy, on a future evening, to devote a paper to the constitutional treatment of the teeth. *(Loud applause)*.

The PRESIDENT.—Gentlemen. I am sure I express your feelings when I offer to Mr. Underwood the thanks of the College for his very able paper *(cheers)*; one interesting in the information it contained, and also as having evoked the discussion which we have had the pleasure of listening to. *(Applause)*.

Mr. H. T. KIRBY, Associate, exhibited a very ingenious and practical machine for making spiral springs.

Mr. Campbell, Dundee, a similar machine for the same purpose. This Gentleman likewise exhibited a very ingenious but simple file carrier, by means of which the width of the file could be regulated; also an improved model tray.

MONTHLY MEETING, May 5.

There was a numerous Meeting of the Members and Associates this evening; the President in the chair.

Mr. C. J. Fox announced the following contributions to the Museum and Library, which had been received by him since the April meeting.

Ancient extracting instrument.—Presented by Byat West, Esq. Broad-street, City.

Specimen of calcareous deposit.—Presented by W. Cocking, Esq.

A model, illustrating Mr. Harding's specimen of an imperfectly developed wisdom tooth.—Presented by Charles James Fox, Esq. 27, Mortimer-street, Cavendish-square.

Specimens of H. L. Jacobs's, Esq. preparation of Gutta Percha.—Presented by H. L. Jacob, Esq. Bridgewater.

Two casts of late dentition and one of an upper jaw, with five supernumeraries, besides the full compliment of teeth.—Presented by R. Thomson, Esq. Camberwell.

Skull of a Leopard.—Presented by R. Thomson, Esq. Camberwell.

Four antique tooth keys, one specimen of exostosis, and two supernumerary teeth.—Presented by J. A. Sayles, Esq. Lincoln.

Two models illustrating a case of well-formed arch, notwithstanding the deficiency of teeth.—Presented by W. D. Saunders, Esq. 33, Baker-street, Portman-square.

A pair of East India wild boar's tusks.—Presented by Alfred Jones, Esq. 64, Grosvenor-street.

Specimens of calcareous deposit.—Presented by — Phillips, Esq. Hull.

Case of osseous union between two lower temporary centrals.—Presented by — Phillips, Esq. Hull.

Ancient instrument for extracting.—Presented by John Lee Statham, Esq. 43, Mortimer-street, Cavendish-square.

Case of exostosis.—Presented by John Lee Statham, Esq. 43, Mortimer-street, Cavendish-square.

Four valuable preparations of the bones of the head and face.

Medecine Dentaire, par A. J. Talma.—Presented by Monsieur Talma, Brussels.

The "Forceps," a journal of dental science.—Presented by —— Bartlett, Esq. Caroline-street, Bedford-square.

On fractures of bones, and resection in gunshot injuries, translated from Stromeyer and Esmarch, by Statham; with cases of resection in civil practice, by the translator.—Presented by S. F. Statham, Esq. F. R. C. S.

Mr. Fox stated that it gave him much satisfaction to announce, that he had at last nearly completed such arrangements as would enable him to throw open the whole of the Museum and Library to the inspection of the Members every time they met in the rooms of the College.

ELECTION OF MEMBERS.

The following Members were elected :—

E. Winterbottom, Jun. Esq. Sloane-street
—— Salton, Esq. . . . Worthing
—— Stewart, Esq. . . . Liverpool
—— Garner, Esq. . . . George-street, Portman-square
W. R. Wood, Jun. Esq. . . Brighton
—— Polini, "Associate" . Stanhope-street

Mr. Adam Thomson read the following paper

ON DENTAL CARIES.

Mr. President and Gentlemen.—The subject of my paper is one, about which there has been much dispute, among dental practitioners; the true cause of *caries* being somewhat obscure: but as our object is educational, and as we meet here for enquiry, I shall with great deference to the opinion of others, venture to state my ideas with respect to the growth of this disease. In so doing, I shall divide my subject into three heads—the three appearances presented by decay. Firstly, *lateral pressure*, or that which arises from the overcrowding of the teeth: secondly, *crucial decay*, or that which we find attacking the crown of the tooth: and, lastly, *erosion*, or that appearance of destruction found at the necks of those organs.

First, then, in order, comes lateral pressure. This species of decay is invariably found where the teeth approximate; many suggest that the lodgment of food and its subsequent acidity, or vitiated saliva

is the *casus belli;* quite forgetting the extreme vitality, and vascularity of the teeth at a certain period: but if this fact be borne in mind, I think we can explain the matter in dispute easily enough. Let us take two of our fingers and bandage them tightly together; we find in a very short time mortification to have commenced, in consequence of the complete stoppage of circulation—so with the teeth. At the time the second set come through the gum, the structure is in a very high state of organization, so much so that the slightest injury given tends to produce a morbid part, and as in the case of the finger, we find the destruction has commenced outwardly, and tends towards a centre; with the teeth, the colour getting gradually lighter as we approach the nerve.

If this species of decay took its origin from the lodgment of extraneous matter, whether food or saliva, how is it that it is seldom or never found past a certain age? If it be so found, the *caries* is so deep seated, that on ordinary calculation, it must have taken years upon years to produce the effect; but if the theory of vascularity of the teeth be admitted, there is much to be deduced from that fact.

In a well-formed mouth, where the teeth are properly set, we find their proximity so beautifully regulated, that a strip of paper can be passed between with the greatest ease; in such a case we never find *caries* between them.

As this must be an admitted fact, how does it agree with the idea of the lodgment of food? If such decay resulted from this cause alone, why does the food not remain, in however infinitesimal quantities, the difference in space not being half a line? All must know, that however great care may be taken to prevent it, certain particles of food *are* retained, for shorter or longer periods, by the indentations of the tooth.

The child's mouth at the age of six years has generally (with the exception of four), the whole of its first and second, or permanent teeth, the latter in progressive stages of formation. The jaw at this period being only formed as far as its angle goes, to retain twenty teeth must necessarily have a more than usual amount of crowding, by containing the two sets, though each of the second is entirely dependent upon the health of the body. As they are evolved, we always find they press on the first set in such a way, as to cause absorption of the fangs, and finally to take their place in the jaw; nature so wisely ordaining it, that as the child advances to, and passes the sixth year, the jaw expands so as to give place to the

second and permanent teeth. These are invariably behind the first, and in separate cells, nourished by the same chord, which not only connects them together, but supports vitality through the medium of nerves and vessels; in proof of which, should the first be prematurely extracted or injured in any way, the second suffer materially.

It is at this period that conscientious advice is necessary; as in many cases there seems to be a tardiness in the shedding of the milk teeth, as they make way for the permanent set, which, in ten cases out of the dozen, is the cause of this unusual degree of crowding. The second teeth being forced from their proper direction, press against one another in such a way as to overlap when through the gum: hence lateral pressure. We have then presented an irregular set of teeth, only to be remedied by mechanical means, and should these not be resorted to, this character of decay will certainly appear at the point of contact; a very strong proof that it arises from pressure. If not too far gone, the judicious use of the file is to be recommended; though the greatest care must be observed, as, up to the period of puberty, their vascularity is so great as to render the operation difficult, if not, in some cases, impossible. If circumstances permit, and the patient be ordinarily careful, by using each morning a piece of tape ribbon, and rubbing well with any simple tooth-powder between the space made, the further progress of the disease is arrested. Now, if *caries* in the tooth existed from lodgment of food, or vitiated saliva, it would be found, that even after filing, the decay would again commence to manifest itself, and baffle all the efforts of the practitioner to prevent its return. Let us suppose that this form of decay did arise from the vitiated saliva, why is it that we do not find it almost ever in the under teeth? It is because by the tongue and saliva constantly passing over them any thing like lodgment is thoroughly prevented. I think there can be no doubt, that this form of decay being oftenest formed in the upper teeth, arises from lateral pressure; though it may be argued, that they have not the same chance of being thoroughly cleansed by the action of the saliva, still there is an infinitesimal portion left, which would, if the saliva theory were correct, be sufficient to produce this morbidity.

The lip, in speaking, acts as a perfect sucker, and causes at all periods, with the exception of that of sleep, a constant current through the interstices; and it appears that the great argument against this theory is, that should a tooth be either stopped or filed properly, we

have no recurrence of this malady. I know of many cases, filed eighteen years ago, and now perfectly healthy.

The second class of decay now to be noticed, is that which attacks the crowns of the teeth; its progress is most insidious, for often there is presented, to all appearance, a healthy tooth though in reality quite undermined; and in masticating some hard substance the whole crown crushes in. This decay commences in the teeth, generally before puberty; and is seldom or never to be met with in any person past the age of sixty. At an early stage of development, the process for the formation of enamel is slow; and long prior to the second tooth making its appearance, we have absorption of the roots of the primary. The enamel at this period being immature, its deposition depends on any sluggishness of the general system. In the formation of the second tooth the enamel is deposited in four small points, forming at a future time the four corners or grinding edges of the molar. From those spots the crown is gradually perfected, tending towards a common centre. It is at this stage that the delicacy of the constitution, from whatever cause it may arise, begins to tell. The deposition of enamel depending in its perfectness upon the health of the system, infantile disease existing, its progress is stopped, leaving the crown incomplete.

The tooth takes its future place in the jaw with easy access, from this imperfection to the fluids of the mouth, seeds of future decay are thus sown, a certain deposit being left, which in time decomposes. If the enamel had been perfectly developed, it would have resisted this destructive action; but as the imperfection above alluded to existed, the bone beneath is attacked from the first by this outward agency, till the tooth is thoroughly destroyed. The enamel is able from its density to resist this acid, but only serves to bottle up what has been conveyed through the orifice, until at last, in masticating, a fracture takes place, and we have the chamber of the tooth exposed. From the many cases that I have examined, I have invariably found the decay crucial. If this disease existed in the tooth distinctly, we would find *caries* of the tooth generally; and, as in the case of cancer, any effort made to permanently arrest its progress, would be fruitless.

I do not now allude to such cases as those in which the nerve has become dead from inflammation, and which may be produced from various causes; but to those in which it has been injured, the decay

having reduced to a stage nearly approaching the moribund, but it still retaining its vitality.

Supposing the disease to have pre-existed from internal derangement of the nourishing system, the question naturally suggests itself, would the removal of the decayed parts arrest its progress? I think not. The tooth being nourished to its centre through its three roots by the medium of vessels and nerves, it would become a bodily disease, and anything done by the practitioner towards its cure, would only serve to protract its destruction. But the decay arising from outward means, consequent upon an imperfection in the formation of the enamel, provided it be thoroughly cut away, all friable edges removed, dried, and stopped, will be prevented from showing any increase or further defect for a very long period of years.

Thirdly.—Erosion, or notching of the teeth: this denomination of decay, for decay it is, is to be met in three or four forms; and I am of opinion that constitutional weakness is its primary cause; it invariably appearing at the junction of the teeth with the gum, and as the acrid matter evolved during illness becomes highly offensive, and we find shortly an indentation filled with a saturated-looking pulp, retentive of any extraneous matter. Its colour is dark brown; and much pain is given in its removal.

The tooth-powders made use of are, in many cases, an originating cause, some having the property of packing, especially charcoal; which, however pure, is full of hard, gritty and insoluble particles; so that, by its frequent use, morning and evening, certain small portions lodge at the junction of the enamel, under the gum, and form a nucleus for future deposits. This, in time, produces great irritation and fulness of the part, the gum recedes to a certain extent; this wedge chips away, and we have part of the bone exposed. This is what may be properly called an origin of erosion, as the strict meaning of the word is "wearing into ridges." Its colour is sometimes white, or slightly yellow, bearing an extremely high polish. The most likely solution, however, is not dependant on the above; for we find the disease in many who have never used this tooth-powder at all; and so gradual is the ravage of this decay, that the patient is not aware of its existence until intromitted with in some way or another. Its colour is of a light brown, and it is extremely sensitive. In those who have been obliged to take acid as a constitutional remedy, the appearance is very different. It presents, in such a case, a ragged and irregular edge; while the decayed bone still adheres in layers or

films, or goes so deep, sometimes, that in removing the carious part, we find the nerve laterally exposed. Of all the species of *caries*, this is the most difficult to treat; and is likewise often found attacking the chalky teeth, which result from strumous dyathethis. In such cases, I have found as a palliative, the greatest benefit accrue from the use of a lotion composed of tannin and a solution of morphia, its property being to harden the surface of the bone, and render it less sensitive.

I cannot conclude this short notice upon the forms of *caries* to be met with on the human subject, without mentioning a curious fact lately brought under my notice by a celebrated elephant hunter. He had many times noticed an elephant apparently suffering some awful agony, and dashing its head against anything that came in its way; and he was lucky enough to witness the animal free itself from the apparent cause. It charged with surprising energy against the stump of a large tree, and broke one of its tusks right in half. He shot the elephant, and upon examining the fracture, found a chamber of several inches in length, scooped out as if by mechanical means. He was much struck with the fact; and in each succeeding animal he destroyed, he made strict examination to discover the cause of this phenomenon, and at last got a specimen which unravelled the mystery. High up in one of the tusks, he found an animal closely resembling a bug, but having two long scissor-like *antennæ*, by which this insect had evidently burrowed its way. How, and from what germ it got its birth, it would be difficult to say; I simply lay before you his narration of this very curious circumstance.

I sincerely trust I have not wearied you by the length of my paper, on a subject respecting which I feel that I could say much more, if time permitted me so to do. However, gentlemen, my object will have been achieved, if my remarks be the means of eliciting the opinions of others on what we must all regard to be a matter of much interest to the Dental Profession. *(Loud applause).*

The PRESIDENT.—Do you ever find the *caries* to extend after the use of the file?

Mr. THOMSON.—Not if the patient be ordinarily careful.

The PRESIDENT.—You attribute *caries* to chemical action?

Mr. THOMSON.—Yes, in some cases.

The PRESIDENT.—There are several theories—the chemical, the inflammatory, and the constitutional theories; so that this is a peculiarly interesting subject for discussion.

Mr. LINTOTT wished to ask Mr. Thomson, did he consider the use of the file judicious in cases arising from lateral pressure.

Mr. THOMSON replied that he did in many cases, where the decay could be removed.

Mr. LINTOTT.—In filing did not Mr. Thomson remove a part of the enamel?

Mr. THOMSON did remove that part of the enamel which was affected.

Mr. LINTOTT.—But was not the entire affected before the *caries* took place?

Mr. THOMSON.—To a certain extent.

Mr. LINTOTT.—Then would it not be better to preserve as much of the enamel as possible?

Mr. THOMSON.—Certainly; that was just what he did in using the file, which he passed from the cutting edge of the tooth to the neck.

Mr. LINTOTT.—In a case arising from lateral pressure, would it not be better to move a tooth, and get at the seat of disease in that way?

Mr. THOMSON.—I prefer filing.

Mr. UNDERWOOD's experience led him to believe that in cases of lateral pressure, the more advisable treatment was to separate the teeth by wedges. Dr. Parmly, of New York, strongly recommended this plan, and mentioned a case which went far to prove its complete success. The case was one in which some eight or ten years ago, it was found necessary to remove a bicuspid; and in which, after a fortnight's use of wedges, the second bicuspid was moved into the place of the first, where it had remained since that time. Although the file was an exceedingly useful aid, when used with discretion, he (Mr. Underwood) was for preserving as much of the enamel as possible, whereby a better case of stopping was sure to be made. He would therefore, whenever possible, have recourse to the plan of separation by wedges. A thin wedge of pine or hickory wood, or of India-rubber, used every day, would soon separate the teeth in the manner desired.

Mr. THOMSON had been rather misunderstood. His remarks as to filing applied to cases of small discoloration, where they could not stop the tooth, and not to those cases in which stopping was indispensable. *(Hear, hear).*

The PRESIDENT would observe, that the pith of the common elder made a capital wedge for dividing. As the matter was absorbed after the insertion of the wedge, the division expanded.

Mr. LINTOTT thought that the objection to the soft wedging was the time it would take to effect the separation.

Mr. UNDERWOOD said that the separation would generally be effected in two or three days, by cotton or India-rubber, and the recession of the gum would prevent hemorrhage

Thanks were then, amid much applause, voted to Mr. Thomson, for his able and interesting paper.

Mr. PERKINS then read a paper on "Pivoting," which gave rise to a lengthened and interesting discussion, that was continued till ten o'clock, and was then, on the motion of Mr. P. Mathews, adjourned till the next monthly meeting.

Before the members separated :—

Dr. W. A. ROBERTS, of Edinburgh, exhibited his ingenious compress for arresting dental hemorrhage.

Mr. PURLAND placed upon the table a pivoted tooth, taken from the mouth of an Egyptian mummy, together with a variety of antique instruments for extracting teeth.

Mr. R. HEPBURN exhibited a palate case, with an extraordinary large and deep fissure, which he had just completed. His object in showing it was, not so much, he said, for the purpose of exhibiting the mechanism of the obturator, as to explain the method he adopted of taking an exact model of the whole of the cavity. Being desirous of obtaining a perfect impression, and seeing the impossibility of withdrawing it in the usual way, he first took a model a little deeper than the original arch of the palate, and fitted a gold plate to the required form, then on the back of the plate he fastened with resin as much soft wax as completely filled the aperture, then pressed it up until the plate thoroughly fitted into its place, and withdrew it; he then hollowed out the entire centre of the back of the plaster cast to the edge of the cavity, placed the wax

and plate through from the other side until it again fitted, reversed the cast, filled it up with plaster, and the result was the model now shewn.

MONTHLY MEETING, JUNE 2.

THERE was a large attendance of Members and Associates at this Monthly Meeting.

NEW MEMBERS.

The following Gentlemen were elected Members :—

— Stewart, Esq.	Elgin, N. B.
— Moore, Esq.	Newport, Isle of Wight
A. Jones, Jun. Esq.	Grosvenor-street
— Vernon, Esq.	Edinburgh
— Vernon, Jun. Esq.	Edinburgh
J. Brophy, Esq.	Dublin
— Barlow, Esq.	Hackney
— West, Jun. Esq.	Broad-street
— Franklin, Esq.	Westbourne-grove
— Sales, Esq.	Lincoln

The discussion on Mr. Perkins' Paper, adjourned over from the previous month, was renewed, and kept up for upwards of an hour, when Mr. Perkins replied, and a warm vote of thanks was passed to him, for his able treatment of the subject.

We shall publish this paper, and the discussion on it, in our October number.

Mr. HARDING then read a paper on the Electric Cautery, and a discussion thereon took place; after which he received the thanks of the Meeting.

The PRESIDENT called the attention of the meeting to the medical bills (of which more will be found in another part of our Journal), and Mr. Underwood gave a very lucid explanation of the points of these measures which affected the Dental Profession.

It was resolved, that the Council should prepare a petition to Par-

liament on the subject of the bills; and that the said petition should lie in the College for signature on the following Friday evening.

The PRESIDENT read the following notices:—

The next ordinary meeting of Members of the College, will be held on Tuesday, October 6th.

The Course of Lectures for the ensuing Session will commence early in the month of October. Full particulars will be duly published, and notices sent to each Member and Associate.

The meeting then adjourned.

LECTURES.

BY GEORGE SIMPSON, F. R. C. S. LATE SURGEON TO THE WESTMINSTER GENERAL DISPENSARY.—Mr. Simpson's introductory lecture on the skeleton, was delivered on Thursday, 9th April. He commenced by stating, that it was his desire and intention to address his younger hearers who were assembled as students in an honourable branch of the medical profession, and trusted that he might not be disappointed in his wish to stimulate and encourage their ardour in the pursuit of their studies in anatomy. He reminded them of the duties and responsibilities of their profession, which had been so well pointed out in the original address of the President. From that address they had, no doubt, derived much instruction; and the lectures of Dr. Steggall must have thoroughly proved to them the absolute necessity for their acquiring an accurate knowledge of the anatomy of the human frame. It was most judicious of the Council to have directed the attention of students to this great branch, as a preliminary to their other theoretical studies. Mr. Simpson gave a general description of the structure of the human skeleton, but dwelt with minuteness on the anatomy of the head and face.

His second lecture was delivered on Thursday, the 23rd April, when he concluded his description of the skeleton; directed the attention of the students to some important points connected with the study of dental surgery; and brought his very interesting course to a close by promising to give a lecture at some future occasion, on the diseases affecting the jaw.

By Alfred Carpenter, Esq. M.B. London, M.R.C.S. &c.—The two lectures delivered by Mr. Carpenter (May 7th and 14th) on "Principles of Dental Surgery," commanded the attention of the very large audiences that assembled to hear them. The arrangement of the subject was extremely judicious, and the mode in which it was treated was intelligible to the most junior student.

Previously to Mr. Carpenter commencing his first lecture, the President rose, and, after a few brief observations relative to Mr. Carpenter's kindness in having come forward and taken the chair at the first public meeting of the dental body, when members of that body had refused to preside, said—"I am directed by the unanimous vote of the Council—and I am sure I may add of the large number of Members now present—to express their high opinion of your liberal and independent course of action on that occasion." *(Loud applause).*

Mr. Carpenter, in reply, observed that he was quite taken by surprise. He was not prepared to receive such a mark of their respect for the small service rendered on that occasion. He had felt, and did now feel, that an independent college was necessary for dental practitioners. They had commenced the undertaking in a liberal spirit, and he had no doubt, that if they so continued, an independent College of Dentists would soon be firmly established, that would, in course of time, rank with the other colleges for the education of professional men. *(Cheers).*

By Dr. Gladstone, F.R.S. &c.—Two very able lectures by this gentleman, on "Bone Enamel," and "The Metals, &c. used in Dentistry," were delivered, the first on the 16th April, and the second on the 30th April. We shall have the pleasure of publishing a considerable portion of these lectures in our next number.

LECTURE BY JABEZ HOGG, M.R.C.S. &c.

(SURGEON TO THE ROYAL WESTMINSTER OPHTHALMIC HOSPITAL),

ON THE MICROSCOPE, OPTICAL ARRANGEMENTS, APPLIANCES, AND PREPARATION OF OBJECTS.

(Continued from page 74).

All microscopes in ordinary use, whether *simple* or *compound*, depend for their magnifying power on that influence exerted by lenses in altering the course of the rays of light passing through them, which is termed *refraction**.

The lenses employed in the construction of microscopes are chiefly *convex;* those of the opposite kind, or *concave*, being used only to cause certain modifications in the course of the rays passing through convex lenses, whereby their performance is rendered more exact. The central or axial ray, as it coincides with the perpendicular, will undergo no refraction; the others will be bent from their original course in an increasing degree, in proportion as they fall at a distance from the centre of the lens. The distance of the focus from the lens will depend, not merely upon its degree of curvature, but also upon the refracting power of the substance of which it may be formed.

The refracting influence of *concave* lenses will evidently be precisely the opposite of that of convex. Rays which fall upon them in a parallel direction, will be made to *diverge* as if from the principal focus, which is here called the *negative* focus†.

When a sound eye of the average power, neither long-sighted nor short-sighted, examines any object in order to see it most distinctly, the observer places the object at the distance of about *six* or *eight* inches, and in this position it is seen of its natural size, and is not said to be magnified. If we hold up at this distance a finger three-fourths of an inch broad, it will appear to cover a wall ten feet distant

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* Lens is derived from the Latin *lentile*, and signifies a small flat beam. The effect of a lens, or common burning glass, is, as is well known, to collect the rays of light falling on its surface, and to unite them at one point, to which the Latin term *focus (fireplace)* has been applied, on account of a considerable degree of heat being produced at that place by the concentration of the rays of light.

† The clearest explanation of this part of optical science will be found in *Dr. Golding Bird's Manual of Natural Philosophy*, or *Brewster's Optics*.

a space of fifteen inches. If we hold it up at three inches from the eye, it will cover a space of thirty inches, and will appear *twice* as large; and if we hold it up at the distance of an inch and a half, it will cover a space of sixty inches, and will appear four times as large. But though magnified in these two last positions, it is not seen distinctly, and therefore we see it more imperfectly than we saw it at the distance of *six* inches. These observations lead us to the simplest of all microscopes, which are the *single aperture microscopes*. If we now look at the finger, when seen indistinctly at the distances of three, and one and a half, inches from the eye, through a small pinhole in a piece of card, it will appear not only magnified, but tolerably distinct, and the distinctness will increase with the smallness of the aperture. The most satisfactory aperture is one made with a needle in a piece of sheet-lead or tinfoil, and when the eye is applied close to it, the vision will be such, that discoveries of rude structures, invisible to the eye, might be made by the observer.

Mr. Gorham very ingeniously shows the magnifying power of short spaces, by admitting the rays of light through minute apertures, at the end of a tube. The pencil of light admitted through an opening of this kind, held within a very short distance of the eye, consists of rapidly-diverging rays falling upon the cornea. Some of these are entirely lost, others are intercepted by the iris, while the remainder pass through the pupil, and give to the image formed on the retina its circular form.

If then, whilst a small object is held very near to the eye, so as to ensure a rapid divergence of the rays proceeding from it, the pupil will be dilated by the small quantity of light which is used, and to which, like a photometer, it immediately responds, so as to admit as large an angle as the lens and humours of the eye are capable of refracting, at the same time that the object is rendered distinctly visible. It is only under such circumstances, we arrive at the utmost limit to the available magnifying power of the unassisted eye.

It is usually said by opticians, with respect to the examination of small bodies, man is long-sighted, and requires glasses of a convex form to make them visible. A microscope here proves serviceable. An artificial image, is, by its aid, formed in front of the eye, on the cornea. The rays meeting to form this image, diverge again from this point in the same way, as if the object from which they originally radiated was there situated.

Thus it gives to the eye the advantage of augmented magnitude,

and removes the inconvenience that arises from the disagreeable proximity of the object. The picture formed upon the retina corresponds with one of an object greatly increased in its dimensions, and viewed at the very smallest distance of distinct vision.

The *compound microscope* may consist of only two lenses, while a simple microscope may be made of three. In the triplet for the simple microscope, however, the effect of the two first lenses is to do what might have been accomplished, though not so well by one; and the third merely effects certain modifications in the light before it enters the eye. But in the compound microscope the two lenses have totally different functions—the first receives the rays from the object, and bringing them to new foci, forms an image which the second lens treats as an original object, and magnifies it just as the single microscope magnifies the object itself.

The compound microscope, fig. 4, consists of an object glass *n l*, a field glass *d e*, and an eye glass *f g*, the object *o b*, being placed a little further from the lens than its principal focal distance: the pencil of rays from which converge to a focus and form an inverted image of the object at *p g*, which image is viewed by the eye placed at *a*, through the eye glass *f g*. The rays remain parallel after passing out until they reach the eye when they converge, by the refractive powers of the eye itself, and are collected on the retina.

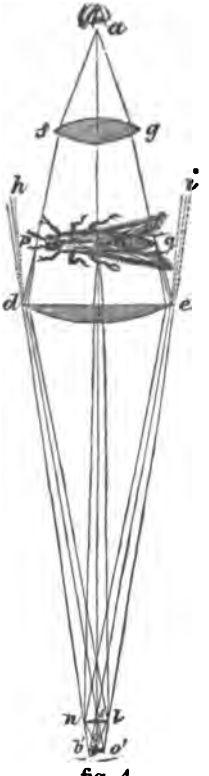


fig. 4.

But the image differs from the real object in a very essential particular: the light being emitted from the object in every direction, renders it visible to an eye placed in any position; but the points of the image formed by a lens, emitting no more than a small conical body of rays which it receives from the glass, can be visible only to the eye situated within its range. Thus the pencil of rays emanating from the object at *o* is conveyed by the lens to *f*, cross each other, and diverge towards *h*, and therefore would never arrive at the lens *f g* without the interposition of the plano-convex lens at *d e*, placed

at a smaller distance from the object; and by this means the pencil *d n*, which would have proceeded to *k*, is refracted or bent towards the lens *f g*, having a radial point at *p g*.

The object is magnified for two reasons, first, because if we view the image with the naked eye, it would appear as much larger than the object, as the image is really larger than it, or as the distance *f b* is greater than the distance from the real object to *f*, and secondly, because this picture is again magnified by the eye-glass. The compound microscope then consists of an object lens *n l*, by which the image is formed, enlarged, and inverted; an amplifying lens *d e*, by which the field of view is enlarged, and is consequently called the *field-glass*, and an eye-glass or lens *f g* by which the eye is permitted to approach very near, and consequently enabled to view the image under a large angle of apparent magnitude, the two, usually combined, are called the *eye-piece*. Since the power depends on the ratio between the anterior and posterior foci of the object glass, it is evident that by increasing that ratio, any power may be obtained, the same eye-glass being used, or having determined the first, any further power may be obtained by increasing that of the eye-glass, and thus by a pre-arrangement of the relative proportions in which the magnifying power shall be divided between the object-glass and the eye-glass, almost any given distance (within certain limits) between the first, and its object may be secured. This is one valuable peculiarity of the compound instrument; and another is the large field or large angle of view which may be obtained, every part of which will be nearly equally good; whereas, with the best simple microscopes, the field is small, and is good only in the centre.

ANGLE OF APERTURE.

The definition of an object-glass much depends upon the increased "angle of aperture." The angle of aperture is that angle, which the most extreme rays that are capable of being transmitted through the object-glass, make with the point of focus: *b a b*, figs. 5 and 6, is the angle of aperture; but it will be seen that the angle of aperture is much greater in fig. 5 than in fig. 6, which represents an uncorrected lens; consequently, a much larger quantity of light is transmitted by the former than by the latter, when any object is subjected to examination. In order to see an object at all distinctly with an uncorrected lens, it is necessary to diminish the aperture so much,

by *the aid of stops*, as to interfere with the transmission of the amount of light required to see the object perfectly.

fig. 5.

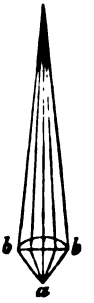


fig. 6.

There is another imperfection inseparable from the compound microscope, which merits our consideration. Whatever defects may exist in the material, or form, or position, of its object-glasses, causing the rays to *stray*, as Sir Isaac Newton calls it, from the true path, whether producing difference of density, or uncorrected colour, or incoincident images, from spherical aberration, or bad centering, the effects are increased *in proportion to the distance of the image from the object-glass*.

From this cause the length of the microscope is limited, and the only remedy for the evil is to shorten the instrument, and produce the requisite power, by achromatic eye-glasses, single, double, or triple. We shall thus be led to make the microscope shorter and shorter, till we descend to triplets, doublets, and single lenses, in which the power of straying is reduced to its minimum. Pure gems, which, from their expense, we hesitated to use in the compound instrument, now come to our aid, and may be easily commanded for single lenses or doublets.

Fluids, too, which may yet be obtained, with a refractive power equal if not superior to the diamond, may, in the future, replace our gems; and if, when such instruments are in our hands, we place the objects in a fluid, filling the space between them and the object-glass; if we illuminate them with homogeneous light, and prepare the observing eye by washing its cornea, and giving to the fluid which lubricates it a true geometrical figure, we may hope that the *future* of the microscope may transcend the *present*, and that splendid revelations yet

await the philosophical observer. The time must come when vast discoveries must be the trophies of observers thoroughly acquainted with all the refinements of optical science. A profound knowledge of the phenomena of diffraction, of the aberration, dispersion, and absorption of light, and of the fallacies of vision, are absolutely necessary in an observer, when structures that are perplexing are to be resolved, and things that are invisible are to be seen.

The Polarizing Microscope.—There are certain structures in minerals, in plants, and in the tissues and various parts of animals, that are *wholly invisible* to the human eye when viewed in common light.

Common light, as it comes from the sun, and from artificial light, consists of or may be divided into two kinds of light, as electricity may be divided into vitreous and resinous, or magnetism into north polar and south polar. Thus divided, common light is said to be *polarized*, and the two portions exhibit different properties when reflected from or transmitted through bodies. Now the separation of common into polarized light may be effected by making light pass through several plates of glass at an angle of about 55°; it may also be divided into two polarized pencils, by passing through certain crystals, such as Iceland spar, quartz, tourmaline, &c. Each pencil is polarized separately, and when a rhomb of Iceland spar is cut into two parts, and these parts combined, so that one of the pencils is hindered from reaching the eye, it constitutes a *Nicol's prism*, now used in the polarizing microscope. In certain crystals, as tourmaline and herapathite (the sulphate of iodo-quinine), one of the pencils is absorbed, and plates of these substances therefore make good polarizers. The polarizing microscope was first constructed and used by Sir David Brewster, in his experiments in 1815, on diamond, rocksalt, amethyst, &c.; who also first employed a film of selenite (sulphate of lime), of such a thickness as to polarize a blue of the second order; such are now used generally to shew off the colours of polarizing structures, when they are not sufficiently strong to be seen—the blue ground gives strength to the coloured tints.

When polarized light has passed through any transparent body, a change is produced upon it by the action of all those bodies that have an invisible structure, and this change is made visible by looking through another polarizer, placed transversely to the first polarizer, which is called the analyzer. The structure of the microscopic object is there displayed in different colours, or in different shades of white

light, the colour, or the degree of light depending on the thickness of the different parts of the object. The forms thus disclosed to the eye are at once splendid and beautiful, never failing to surprise even observers who have been long accustomed to the sight.

The Huyghenian eye-piece is the best for all ordinary optical purposes; but when it is required to measure the magnified image, use the eye-piece invented by Mr. Ramsden, called by him the micrometer eye-piece.

The rough mode of ascertaining the magnifying power of the compound microscope, is generally taken on the assumption that the naked eye sees most distinctly at the distance of ten inches.

Place on the stage of the instrument a known divided scale, and when it is distinctly seen, hold a rule at ten inches distance from the disengaged eye, so that it may be seen by that eye overlapping or lying by the side of the magnified picture of the other scale; then move the rule till one or more of its known divisions correspond with a number of those in the magnified scale, and a comparison of the two gives the magnifying power.

To the most complete instruments a set of eye-pieces, consisting of three, is generally made. These differ in power; the longest is always the lowest power, and is marked A. Its angular aperture, which determines the size of the field of view, is generally less than that of the others (if constructed on the Huyghean plan), being limited by the diameter of the body. It is usually about 20 degrees. The next eye-piece, or middle power, marked B, and the deepest, C, have more than 30 degrees of angular aperture.

For viewing thin sections of recent or fossil woods, teeth, bone, coal, the fructification of ferns and mosses; fossil-shells, seeds, small insects, or parts of large ones; molluscs, or the circulation in the frog, &c. the eye-piece A is best adapted.

For examining the details of any of the above objects, it will be advisable to substitute the eye-piece B, which also should be used in the observation of crystals when illuminated by polarized light, the pollen of flowers, minute dissection of insects, the vascular and cellular tissues of plants, the Haversian canals and lacunæ of bone, and the serrated laminæ of the crystalline lens in the eyes of birds and fishes.

The eye-piece C is of use when it is requisite to investigate the intimate structure of delicate tissues; and also in observations upon fossil infusoria, volvox, scales from moths' wings, raphides, &c. The

employment of this eye-piece, when a higher power is required, obviates the necessity of using a deeper object-glass, which always occasions a fresh arrangement of the illumination and focus. It must be borne in mind, that the more powerful the eye-piece, the more apparent will the imperfections of the object-glass become; hence less confidence should be placed in the observations made under a powerful eye-piece, than when a similar degree of amplification is obtained with a shallow one and a deeper object-glass.

The degree of perfection in the construction of the optical part of a microscope, is judged of by the distinctness and comfort with which it exhibits certain objects, the details of which can only be made visible by combinations of lenses of high magnifying power, and a near approach to correctness. Such are called by the microscopist *test-objects*.

Much of the beauty of the objects seen depends upon the management of the light that is thrown upon or behind them, which can only be fully mastered by practice. It may be remarked, however, as a general rule, that in viewing those which are transparent, the plane mirror is most suitable for bright daylight; the concave for a lamp or candle, which should have the bull's-eye lens, when that is used, so close to it, that the rays may fall nearly parallel on the mirror.

If the bull's-eye lens is not used, the illuminating body should not be more than five or six inches from the mirror. The latter is seldom required to be more than three inches from the object, the details of which are best shown when the rays from the mirror fall upon it before crossing; and the centre should be, especially by lamplight, in the axis of the microscope. For obscure objects, seen by transmitted light, and for outline, a full central illumination is commonly best; but for seeing delicate lines, like those on the scales of insects, it should be made to fall obliquely, and in a direction at right angles to the lines to be viewed.

The diaphragm, fig. 7, is often of great use in modifying the light

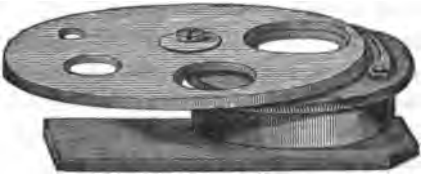


fig. 7.

and stopping such rays as would confuse the image (especially with

low or moderate powers); but many cases occur when the effects desired are best produced by admitting the whole from the mirror. If an achromatic condenser is employed instead of the diaphragm, its axis should correspond with that of the body; and its glasses, when adjusted to their right place, should show the image of the source of artificial light; or by day, that of a cloud or window-bar in the field of the microscope, while the object to be viewed is in focus. The most pleasing light for objects in general is that reflected from a white cloud on a sunny day; but an Argand's lamp or wax-candle, with the bull's-eye lens, is a good substitute. A large proportion of opaque objects are seen perfectly well (especially by daylight) with the side reflector, and the dark bore as a background; and for showing irregularities of surface, this lateral light is sometimes the best; but the more vertical illumination of the Lieberkuhn is usually preferable, the light thrown up to it from the mirror below being, with good management, susceptible of much command and variety.

Dipping-tubes for various purposes.—These are tubes of glass, fig. 8, about nine inches in length, open at both ends, and from one-eighth to one-fourth of an inch in diameter. The ends should be nicely rounded off in the flame of a blow-pipe; some of them may

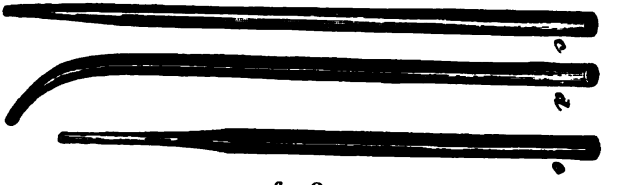


fig. 8.

be straight, whilst others should be drawn out to a fine point, and made of either of the shapes represented at *c d e*.

Dissecting Knives, &c.—Knives and needles of various kinds and sizes are required for microscopic dissection: the best for the purpose are represented in fig. 9, being in fact, the very delicately-made knives used by surgeons in operations upon the eye. Dissecting needles may be either straight or curved. They may be fixed, or made to take in and out of their handles. Three of the most convenient are shown in fig. 10; these are made expressly by Mr. Weedon, of Hart Street, for the use of the microscopist.

The mode adopted for breaking up tissues into very small pieces is usually conducted as represented at fig. 11, with a pair of the

small needles held firmly between the fore-finger and thumb. The structure must be *teased* out ; an operation which requires care and per-

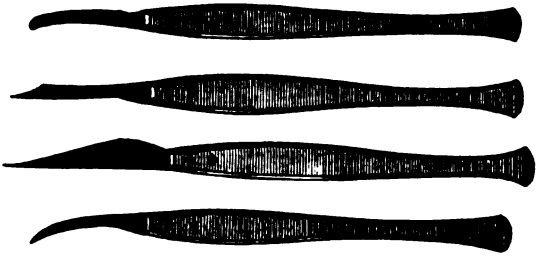


fig. 9.

severance, as most of the animal tissues are very difficult of separation, especially when it is wished to examine them under high powers.

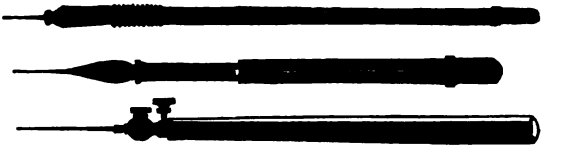


fig. 10.

All substances should be carefully separated from dust and other impurities which would render their structure indistinct, or confusing.

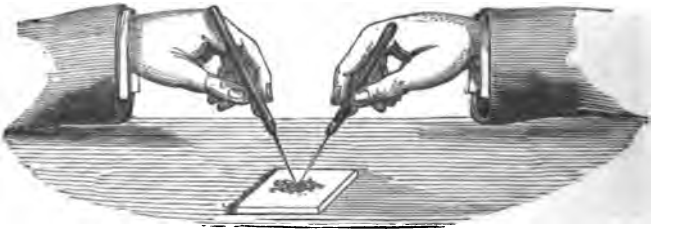


fig. 11.

With very delicate membranes, and with those of the nervous system of the smaller animals, insects, &c. it becomes necessary that the investigation should be carried on under water, or in fluid of some sort, the object being contained in a glass case, and having a very strong

light thrown down upon it by the aid of the condensing lens, as represented in fig. 12. A certain amount of change of structure must

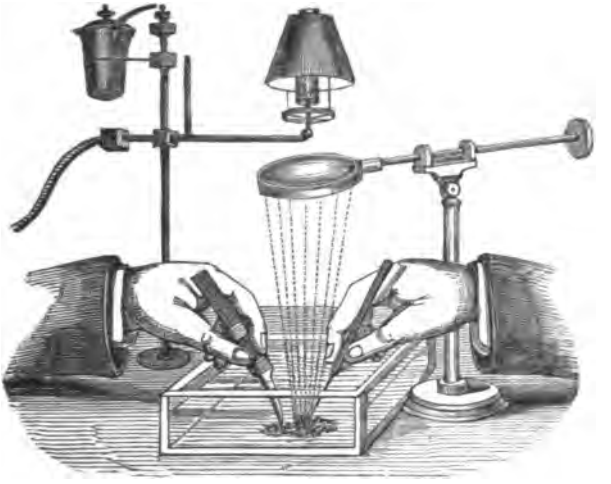


fig. 12.

be expected and allowed for ; nearly all will imbibe some portion of the fluid. The cells or troughs are generally made of pieces of stout plate-glass, their edges being accurately ground, and cemented together with *marine-glue* or sealing wax : the size of the trough should be about three inches square, and one inch deep.

If desirable to dissect under the microscope itself, the instrument must be brought over the trough, and the subject adjusted to the focus of an inch or a two-inch magnifier, as it is very difficult to employ a much higher power. The simple microscope is generally employed for this purpose. If the object be a portion of an injected animal, it is better to pin it out on a piece of cork covered with *white wax*, and then immerse it in the water-trough ; the more delicate the structure, the sooner after death should it be examined, especially in animals. With most vegetable structures, the dissection should be carried on under water. The separation of the woody and vascular tissues, and the spiral vessels, is only effected by maceration, and tearing with needles under water.

Dissecting Scissors.— In addition to the forceps and knives, scis-

sors will be necessary for the purposes of dissection: of these the most useful are shown in fig. 13. They are either straight or curved;

fig. 13.

of the first kind, two pairs will be required, one having the extremities broad, and the other sharp-pointed; and if large dissections be undertaken, a still stronger pair, with the extremities broad, and made rough like a file, will also be necessary. In dissecting under the microscope, the curved-pointed pair shown at *f* will be found most convenient. In all of these instruments the points should fit accurately together; sometimes those that are very sharp are apt to cross; this may in a great measure be prevented by having the branches wide at the base where they are riveted. The points can be sharpened on a hone, and a magnifier employed to examine if they fit closely together.

On mounting and preserving Objects.—Microscopic objects are usually mounted on slips of glass three inches by one inch, either dry or immersed in some fluid. The minute structures, such as the tissues of animals, parts of insects, vessels of plants, &c. must be preserved in thin cells, made as directed above, with a small amount of fluid*. Clean the glass with a weak solution of ammonia or potash from all grease, and wipe it dry with a piece of chamois leather or cotton velvet; cloth generally leaves behind it small filaments, which are always unsightly when seen near the object. Let fall a drop of the preserving fluid or Canada balsam on the centre of the glass; then place the object in it with a small pair of forceps, and

* Cells for microscopic purposes may be purchased of Mr. Baker, 244, High Holborn.

spread it out very carefully with the point of one of your fine needles. Select a thin glass cover, previously cleaned, touch its edges with cement, and let it fall gently and gradually down upon the object, as represented in fig. 14; press it lightly to exclude any excess of fluid,

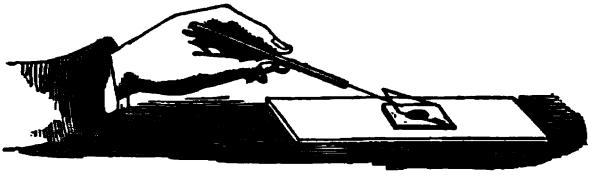


fig. 14.

which remove with strips of blotting-paper, being careful to do all this with a light hand, that small bubbles of air may not insinuate themselves to replace any lost fluid: air-bubbles are at all times unsightly, and liable to spoil an object when allowed to remain. Lastly, cement the edges of the cover to the bottom glass with japanners' gold-size, or sealing-wax varnish, carefully drawn around the edges with a camel's-hair pencil. The cement recommended by Mr. Quekett for cementing deep cells, is made by melting together two ounces of black resin, one ounce of bees'-wax, and one of vermilion. Mr. Hett prefers dark-coloured and old japanners' gold-size for securing the cells of his beautifully-delicate injected preparations*. Mr. Brooke uses Brunswick black, to which has been previously added a little India-rubber dissolved in mineral naptha, to prevent its cracking when dry.

Preparation of Hard Tissues.—All sections of recent and greasy bones should be soaked in ether for some time, and afterwards dried in the air, before they are fit for the saw, file, and hone; by dissolving out the grease, the lacunæ and canaliculi show up very much better. When we wish to examine the bone-cells of fossil bone, chippings only are required; these may be procured by striking the bone with the sharpe edge of a small hammer, such as those used by mineralogists: carefully select the thinnest of the chips, and mount them at once, without grinding, in Canada balsam. If thought desirable to compare bone structures, bear in mind that the specimens

* For methods of making various good cements, consult Ure's *Dictionary of Arts and Manufactures.*

used for comparison should be cut in one and the same direction, for the bone-cells, on which we rely for our determination, are always longest in the direction of the shaft of the bone; it follows that if one section were transverse and the other longitudinal, there will be a vast difference in the measurement of the bone-cells, in consequence of their long diameter being seen in the one case, and their short diameter in the other; hence the caution of having all the sections made in one direction. In all doubtful cases, the better plan is to examine a number of fragments, both transverse and longitudinal, taken from the same bone, and to form an opinion from the shape of the bone-cell which most commonly prevails.

The Teeth.—The best mode of examining the teeth is by making fine sections and preparations softened in hydrochloric acid. Specimens should be taken, both from young and old teeth, to note the changes. A longitudinal, or transverse slice should be first taken off, by a circular saw, fitted to a lathe, this cuts them very quickly—then rubbed down, first by the *corundum-wheel*—a very hard material used by dentists for polishing—this should also be fitted to the head-stock of the lathe, fig. 15—finish the rubbing down between two pieces of water-of-Ayr stone, and finally clean and polish between two plates of glass, or on a polishing-strap with putty powder. The section will

SMALL LATHE FITTED WITH CORUNDUM WHEEL FOR POLISHING.

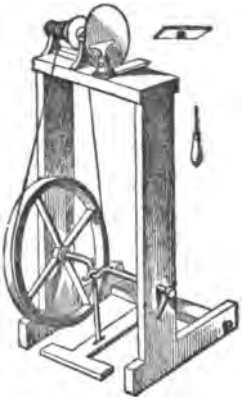


fig. 15.

require to be washed in ether, to remove all dirt and impurities. When well polished and dried, it may be preserved without further

addition, that is in a dry state, under thin glass, and cemented down with gold-size, or varnish.

Such polished sections are preferable to many others, which, on account of their irregular surface, require to be covered with fluids, as Canada-balsam, turpentine, &c. in order to fit them for examination with high powers. It almost always happens, that some portion of these fluids enters the dentine, which then becomes quite indistinct, and almost invisible in its ramifications.

Two sections made perpendicularly to one another through the middle of the crown and fang of a tooth, from before backwards, and from right to left, are sufficient to exhibit the more important features of the teeth; but sections ought also to be prepared, showing the surface of the pulp cavity and that of the enamel; and likewise various oblique and transverse sections through the commencement of the dentine in the fangs, to exhibit the anastomoses of their branches. The dental cartilage is easily shown by maceration in hydrochloric-acid, a process which requires a longer or shorter time, according to the concentration of the acid. It is very instructive also to macerate thin sections in acid, and to examine them upon a slip of glass, at intervals, until they entirely break up. The enamel prisms are readily isolated in developing enamel; the transverse lines, best seen when the section is moistened with hydrochloric acid. The early development may be studied in embryos of two, three, or four months, with the simple microscope; and in transverse sections of parts hardened in spirits of wine: the structure of the dental sac, and the development of the dental tissues is equally well seen in preparations preserved in spirit, as in fresh subjects. The pulp of mature teeth is obtained by breaking them in a vice, and the nerves made out without difficulty on the addition of a dilute solution of caustic soda.

To cut through the enamel of the tooth, it will be necessary to lessen the friction, by dropping water upon the saw as it is made to revolve. The section can, afterwards, be very quickly ground down by holding it against the flat side of the corundum-wheel*. A small handle, mounted with shellac, to fix the section in, forms a ready holder. When this has been sufficiently accomplished, the section can be polished as before directed, by rubbing it between two pieces of the water-of-Ayr stone, or on a hone of Turkey-stone kept wet

* Corundum is a species of emery composition, alumina, red oxide of iron, and lime.

with water. As the flatness of the polished surface is a matter of the first importance, that of the stones themselves should be tested from time to time; and whenever they are found to have been rubbed down on one part more than another, they should be flattened on a paving stone with fine sand, or on a lead plate with emery. When this has been sufficiently accomplished, the section is to be secured, with Canada balsam, to a slip of thick well-annealed glass, in the following manner:—

Some Canada balsam, previously rendered somewhat stiff by evaporation of part of its turpentine, is to be melted on the glass slip, so as to form a thick drop, covering a space somewhat larger than the size of the section, and it should then be set aside to cool; during which process, the bubbles that may have formed in it will usually burst. When cold, its hardness should be tested with the edge of the thumb-nail; for it should be with difficulty indented by pressure, and yet, should not be so resinous as to be brittle. If it be too soft, as indicated by its too ready yielding to the thumb-nail, it should be boiled a little more; if too hard, which will be shewn by its chipping, it should be re-melted and diluted with more fluid balsam, and then set aside to cool as before. When of the right consistence, the section should be laid upon its surface, with the polished side downwards; the slip of glass is next to be gradually warmed until the balsam is softened, care being taken to avoid the formation of bubbles, and the section is then to be gently pressed down upon the liquified balsam, to drive out the superfluous balsam in a sort of wave towards the side, and an equable pressure being finally made over the whole. If air bubbles get beneath, and cannot be expelled by increasing the pressure over the part, or by slightly shifting the section, it is better to take it off and melt fresh balsam upon the glass, and then to lay the section upon it as before. When the section has been thus secured to the glass, it may be readily reduced in thickness by grinding. When the thinness of the section is such as to cause the water to spread around it between the glass and the stone, an excess of thickness on either side may often be detected by noticing the smaller distance to which the liquid extends. In proportion, as the section attached to the glass is ground away, the superfluous balsam which may have exuded around it will be brought into contact with the stone; and this should be removed with a knife, care being taken that a margin be still left round the edge of the section. As the section approaches the degree of thin-

ness, which is most suitable for the display of its organization, great care must be taken that the grinding process is not carried too far; and frequent recourse should be had to the microscope to examine it. The final polish must be given upon a leathern strap, or upon the surface of a board covered with buff leather, sprinkled with putty-powder and water, until all marks and scratches have been rubbed out of the section.

In preparing sections of bone, or teeth, it is important to avoid the penetration of the Canada balsam into the interior of the *lacunæ* and *canaliculi;* since, when these are filled by it, they become almost invisible.

The benefit which is derived from covering the surfaces of the specimen with Canada balsam, may be obtained without the injury resulting from the penetration of the balsam intoaits interior, by adopting the following method:—

A small quantity of balsam, proportioned to the size of the specimen, is to be spread upon a slip of glass, and to be rendered stiffer by boiling, until it becomes nearly solid when cold; the same is to be done to the thin glass cover; next, the specimen being placed on the balsamed surface, and being overlaid by the balsamed cover, such a degree of warmth is to be applied as will suffice to liquify the balsam, without causing it to flow freely; and the glass cover is then to be quickly pressed down, and the slide to be rapidly cooled, so as to give as little time as possible for the penetration of the liquified balsam.

CHEMICAL RE-AGENTS.

The following chemical re-agents and preservative fluids are recommended for microscopic uses:—

1. *Alcohol*, principally for the removal of air from sections of wood and other preparations; also as a solvent for certain colouring matters.

2. *Ether*, chiefly as a solvent for resins, fatty and other essential oils, &c.; also useful for the removal of air.

3. *Solution of Caustic Potass*, as a solvent for fatty matters; also of use, occasionally, in consequence of its action upon the rest of the cell-contents and thickening layers. This solution acts best upon being heated.

4. *Solution of Iodine* (iodine one grain, iodide of potassium three

grains, distilled water one ounce) for the coloration of the cell-membrane and of the cell-contents.

5. *Concentrated Sulphuric Acid*, employed chiefly in the examination of pollen and spores.

6. *Diluted Sulphuric Acid* (three parts acid, one part water), for the coloration of cells previously immersed in the iodine solution. The preparation is first moistened by the iodine solution, which is afterwards removed with a hair pencil, and a drop of sulphuric acid added by means of a glass rod; the preparation is then immediately covered with a piece of glass. The action of the sulphuric acid and iodine, as well as that of the iodized chloride of zinc solution, is not always uniform throughout the whole surface of the preparation. The colour is more intense where the mixture is more concentrated; it frequently happens that many spots remain uncoloured. The colour changes after some time, the blue being frequently changed into red after twenty-four hours.

7. *A Solution of Chloride of Zinc, Iodine, and Iodide of Potassium.* A drop of this compound solution, added to a preparation placed in a little water, produces the same colour as iodine and sulphuric acid. This solution, which was first proposed and employed by Professor Schultz, is more convenient in its application than iodine and sulphuric acid, and performs nearly the same services, while it does not, like the sulphuric acid, destroy the tissues to which it is applied. It is prepared by dissolving zinc in hydrochloric acid; the solution is then saturated with iodide of potassium: more iodine is to be added if necessary, and the solution diluted with water.

8. *Nitric Acid*, or what is better, chlorate of potass and nitric acid, as an agent to effect the isolation of the cells. The mode of employing this means, also discovered by Professor Schultz, is as follows:—

The object, a thin section of wood for instance, is introduced, with an equal bulk of chloride, or chlorate of potass, into a long and moderately wide tube, and as much nitric acid as will at least cover the whole.

The tube is then warmed over a spirit lamp; a copious evolution of gas takes place, upon which the tube is removed from the flame, and the action of the oxidizing agent allowed to continue for two or three minutes. The contents of the tube are then poured into a watch-glass with water, from which the slightly cohering particles

are collected and placed in a tube, and again boiled in alcohol as long as any colour is communicated.

They are again boiled in a little water. The cells may now be isolated under the simple microscope by means of needles. The boiling with nitric acid and chlorate of potass should never be carried on in the same room with the microscope, the glasses of which may suffer injury from the vapours. The same remark applies to all chemical vapours.

Thin sections of vegetable tissue are warmed for half a minute, or a minute, in a watch-glass: boiling is here unnecessary. The section is taken out, and treated with water in another watch-glass. Alterations of structure follow this process very frequently.

9. *Oil of Lemons*, or any other essential oil, a drop of which is useful for the investigation of pollen and spores.

10. A moderately strong solution of *Arsenious Acid* is found to be very useful for the preservation of microscopic preparations. Made as follows:—

Boil some arsenious acid in distilled water; when saturated, dilute with from three to six parts of distilled water, and filter for use. Keep it in a stopped bottle.

Lastly may be enumerated a pretty strong solution of *Carbonate of Soda*, and also of *Acetic Acid*; which latter, however, is more especially useful in the investigation of animal tissues.

To the above may be added a test for protein compounds. This test is composed of sugar and sulphuric acid, and is thus employed: a thin section or portion of the tissue to be examined, is placed in a drop of simple syrup. This is then removed by means of a hair pencil, and a drop of the diluted sulphuric acid added; the red colour usually does not appear until after the lapse of about ten minutes.

In making thin sections of tissues, it is recommended that, in those objects, the consistence of which differs in different parts, the section should be carried from the harder into the softer portion; also, in making a thin section of a very minute yielding substance, to enclose it between two pieces of cork, and to slice the whole together. It is also useful sometimes to saturate the object with mucilage, which must be allowed to dry slowly: in this way, very delicate tissues may be sliced, or otherwise divided without injury, and with facility.

THE COLLEGE OF DENTISTS OF ENGLAND:

ITS ORIGIN AND DEVELOPMENT.

(Continued from page 51).

Believing then that the gentlemen who had been selected to act as a Provisional Committee would throw their energies into the matter, the evening was soon fixed upon for the first meeting to take place, and of the number summoned to attend, ten appeared in person. In the meantime, however, the hope of obtaining the co-operation of *all* had been peremptorily cut off, by letters from Messrs. S. Cartwright, Burlington Street, C. Stokes, Brook Street, and J. Tomes, Cavendish Square, declining to become associated with the enterprise. It appeared that the publishing of the names of these gentlemen had caused offence, inasmuch as there had been no permission given so to do; and as this was one of the noticeable circumstances of the time, the following remarks may not be ill-timed, or out of place.

On the breaking up of the public meeting, the duties of the Secretaryship were divided between Mr. Rymer and Mr. Hill. The latter gentleman was requested to see that the list of names of the Provisional Committee appeared in the "Times" on the following day, or the day after, and it was entirely forgotten to place asterisks against the names of such as were not present, and consequently whose sanction had not been actually obtained. That this was an oversight is true; but, if fault there be, it lies on the part of judgment, and not of *intention*. Nevertheless, objection was taken at the proceeding, and that objection formed a basis on which a plea against union with the cause was built. As an *objectionable* proceeding the matter was to be deplored, but the consistency of publicly announcing who the parties were on whom the choice of the profession fell is most clear; and how the Secretaries would have met the charge of not doing so without compromise of some sort, it is difficult to say. This is certain, that Mr. Hill waited upon Mr. Tomes, and explained the reason why the notification had been made, a duty he considered devolving upon him from the fact that he individually had caused the offensive advertisement to appear, and moreover, that Mr. Tomes had formerly stood in the relation of instructor to him in the operative department of his profession. The result of the interview was not calculated to inspire hope of assistance from Mr. Tomes in

the faintest degree; on the contrary, the resolution of that gentleman seemed fixed to disconnect himself entirely from a movement which he predicted could not possibly succeed.

The list of names selected and published was strongly typical of the disjointedness of the profession generally, and had that Committee met in person, how few would have known each other! But to return.—The ten who had assembled on the 29th of September 1856, proceeded at once to discuss those matters which appeared necessary to be dealt with at the outset; and a set of rules drawn up for the occasion occupied a great portion of the evening.

The task of organizing a profession, which up to that time had never had one real practical jot of fellowship and unanimity in it, now lay before them; and a huge difficulty when calmly and intelligently looked at did it appear. Here was an exploit to perform pretty nearly allied to dealing with original chaos. Could a Committee of Dentists even agree among themselves, let alone *so agree*, as to be able to present a code of laws which would be hailed with satisfaction by a very large number of the body of practitioners? The bare thought looked ominously doubtful. Let those who know something of the acrimonious, jealous, and party-spirited notions which so completely beset, and, unhappily, distinguished the dental profession, remember, that to take part in the framing of regulations for its future guidance, involved no small portion of judgment, intermixed with self-denial and control. All this, however, did not daunt the Committee in their undertaking; for a feeling of disgrace at the then present state of things, allied to a genuine hope that success would eventually attend their endeavours, bore them over every obstacle, and buoyed them up in the prospect of difficulty. On that evening, Mr. Vasey, who was present, declined continuing a member of the Committee, and his resignation was accordingly accepted.

The loud outcry which had been raised about the position of the place selected for the public meeting, determined the Committee to remove to one at once more central and convenient; and therefore the Freemason's Tavern was decided upon as best answering the purposes for which it would be required.

Much actual labour had to be done before the Committee could present themselves to the profession, furnished with a proper report, and equipped with suggestions arising out of the materials and circumstances with which they had to deal.

The important announcement made at the public meeting, touch-

ing a memorial to the Royal College of Surgeons, it was highly necessary for them to know something of, in order that the whole or part of it might be recommended for adoption at the forthcoming meeting of the profession, if found to be at all compatible with the interests of the body at large. To this end a respectful letter was addressed to the Council of the Royal College of Surgeons, which in due time was replied to with a copy of the said memorial enclosed. To say that this document received an impartial investigation, is only to say the truth, as the Committee were not so thoroughly wedded to their own course of action, as to ignore any and every other method of procedure. But, on patient investigation and honest deliberation, it was deemed antagonistic to the common rights and privileges of the profession.

The whole thing had been kept "*sub rosa*," until it could be no longer retained in secret, and when the matter *was* brought into the full light of open day, it appeared no less patronising than presumptive, and certainly as unceremonious as intolerant. The Committee denied the right of any man, or set of men, to dictate their own terms to the profession at large, even though they were the leading men. If the general mass of practitioners were to be affected by this or any other measure, who was the man, or who were the twelve or eighteen men, that had gotten the power thus privately, and to their own peculiar individual tastes, to fashion the great majority? The thing was monstrous; and how much soever the Committee might have fallen in with the views of the memorialists in part of their prayer, the spirit with which it had been originated and fostered, in the hope of quick maturity, was so thoroughly un-English and improper, that nothing remained but to discard it altogether.

The surprise of the profession would have been no trifling surprise, had the Council of the Royal College of Surgeons granted the *private* request of some twelve practitioners, and indignation at such a decision would not have been confined to a few.

During the interval between the committee meetings, the Secretaries were employed in thoroughly canvassing the profession. The result of this was a copious correspondence from the metropolis and the country, the general tendency being most decidedly in favour of the projected movement under the Committee's management. The letters were divided into three classifications, respectively headed, "London and Country unqualified Approvals," "Approvals with Suggestions," and "Doubtful Approvals;" and the former grew to a

thick bundle, by the side of which the two latter were insignificant pigmies. This encouraged the Committee to persevere in their work, despite failing friends and implacable foes. They knew that to have a proper institution they must have the voice of the large majority. Difficulties seemed to increase, and disagreeables multiply, on each successive meeting; for these workers found themselves surrounded by all sorts of opinions, and encompassed by a complicated mass of notions from without, as to the *best* way of proceeding, to sift which, thoroughly and well, required patience and application of no ordinary kind. All this might readily enough have been anticipated from a body of individuals, each one of whom having no generally recognised standard of respectability, had consequently formed his own. Should the advertisers of a certain order be considered eligible? Where was the line to be drawn about men who used the public journals as a medium of obtaining practice? What could be legitimately called a disreputable advertisement? These and a thousand similar questions came trooping up in thick battalions, every one of which required patient investigation and a nicety of discrimination, at first not discoverable.

Anxious to please all, the Committee feared that they might even please very few; nevertheless, the task that had been consigned to them they resolved to perform to the best degree possible, leaving a wide margin for alterations, which would be most likely to arise at the public meeting now approaching.

Towards the end of October the rules first drawn up had received considerable attention and much alteration. Still the Committee considered them capable of further improvement, and much time and great pains were taken to effect that object. Many of the letters received contained valuable suggestions, which were acknowledged, and then acted upon. To make harmony out of discord is no contemptible object; and something tantamount to this was what they hoped to accomplish. About this time, Mr. Edwin Saunders forwarded a letter to the Committee, desiring that his name might be erased from the list of the Committee. What was the actual, veritable cause of that gentleman's refusal to act or become connected with this movement, has not transpired, although rumour (it is said) has not been idle, or very far wrong in surmising. True, the Committee had not, from the first, been fortunate enough to secure his personal presence, but the communications received from him, were far, very far from unfavourable. As Mr. Saunders would have been a powerful acquisi-

tion, this notification of his determination to withdraw, was to be accounted a loss, and was recognised as such. Yet the Committee were supported, and where one failed, many proved true additions, and so encouragement came.

As the time for the second public meeting drew on, arrangements found to be absolutely necessary came thick and fast, not the least of which was the appointment of a proper chairman for that occasion. Various names were selected, amongst which may be mentioned Mr. Thomas Wakley, Mr. Prowett, Mr. Waite, Mr. Lintott, and Mr. Robinson. Then it became the duty of Mr. Hill to wait upon these and other gentlemen, in order to ascertain their opinion and decision on the matter. Mr. Rymer corresponded with Mr. Thomas Wakley, who declined the honour, although not averse to help the movement in other ways and by other means. As the meeting of the profession had been fixed for November the 11th, it was necessary to call a final committee meeting shortly before that date, and on that occasion Mr. Hill had to announce that *all* the gentlemen to whom he applied had given a positive and distinct refusal to accept the office. This (upon further consideration) the Committee could not but very readily account for, owing to the split position of the profession at that moment, by which the person accepting the chair on the evening in question, would be placed in an unenviable position. The Committee nevertheless desired that their own chairman should be exempted from the post if possible, in which Mr. D. Mackenzie fully concurred. Under these circumstances Mr. Hill was deputed to wait further upon Mr. Robinson, in order to induce him to discard his objections, and prevail upon him to take the lead in this reformatory movement. Upon the following morning Mr. Hill attempted an interview, but was frustrated, and then committed his message to paper, requesting Mr. Robinson to reconsider his decision. This ended in an interview; when, after an hour's debating, Mr. Robinson consented to allow his name to be proposed as chairman, of the convention of his brother practitioners in public assembly.

This goes to disprove all the unkind remarks which have been made in so many instances with regard to the President of the College, and the *readiness* with which the office was accepted; for if difficulty was experienced in gaining Mr. Robinson for the evening in question, a thousand fold more were the obstacles which had to be overcome, ere the nomination of that gentleman took place for President; but of this more will be said further on.

Let the supporters of the college remember, *that not one of those who were invited would in the first instance take the chair;* and then they will better understand what they owe to their now-respected President, for the step which he took on that occasion. Let the simple question be asked—"*Why* should Mr. Robinson place himself where no other practitioner of the like high respectability and standing would venture?" Was it a post of pleasure? By no means—for there were those ready to attribute the act to base motives, and an opposing spirit. Such, however, was not the reason (as all who *really* know Mr. Robinson would be constrained to admit), but a laudable desire to help forward a movement, which had for its aim the elevation of a much-degraded profession. The announcement by Mr. Hill that Mr. Robinson had consented to take the chair, was hailed by the Committee with much satisfaction, after the many refusals they had received from others.

The proceedings up to this time had been carried on systematically and well: the profession had been supplied with the rules which the Committee considered sufficient for a starting point, and a very general feeling of satisfaction was the result. But these matters had involved pecuniary outlay, and on auditing the accounts, the sum of £22 : 13s. 3d. was found to have been expended. This monetary affair it was deemed very desirable should be wiped off prior to the public meeting taking place, and accordingly it was resolved to subscribe for that purpose at once, each member of the Committee then present agreeing to place his guinea on the table. Honour to whom honour is due:—the following are the names of those who thus liberally contributed with their purse as well as time to the promotion of the end in view:—

Mr. J. Bate	Brighton
— R. Bradshaw	Camden Town
— C. J. Fox	Mortimer-street
— W. Harnett	Panton-square
— A. Hill	Euston-square
— A. Hockley	Gerrard-street
— A. Lows	Carlisle
— D. Mackenzie . . .	Saville-row
— P. Matthews . . .	Lower Berkeley-street
— W. Perkins	Maida-hill
— R. Thomson . . .	Camberwell
— E. H. Tweed	Upper Brook Street
— G. T. Watt	Sloane-street
— J. L. Rymer	Croydon

Other contributors eventually dedicated sums to the liquidation of this unavoidable debt, who were not of the Committee, so that no appeal was ever made to the profession for its discharge. The presentation of the report of the Committee's proceedings and deliberations, would form one feature of the evening's occupation, and embodied in the report were the suggested rules, perhaps the more important matter of the two. These, however, were now in a definite form, and at seven o'clock on the evening of the 11th of November, Mr. Robinson was proposed to fill the chair. The unanimous voice of the two hundred dentists present unmistakeably proved the welcome with which that gentleman was received.

In a speech of considerable ability, the general principles on which the Dental Institute (as it was then proposed to be called) were propounded by him; and in the course of his remarks, the reasons for his occupying the position of chairman were explained. The report was then read by Mr. Rymer, together with the rules which had been drawn up by the Provisional Committee. The report was moved for adoption by Mr. D. Mackenzie, seconded by Mr. A. Thomson, and agreed to; but as the alterations proposed in some of the rules were considered worthy of attention, these were referred back to the Committee for re-consideration. Mr. Somerset Tibbs moved, that the Committee be re-elected to complete the arrangements of the Society; and Mr. Gray seconded the motion, which was carried unanimously, the meeting pledging itself to use all endeavours to assist the Committee in their undertaking.

The whole evening passed off with unanimity and apparent satisfaction, a vote of thanks to Mr. Robinson being passed by acclamation at the close.

So far, then, the profession seemed determined to resist disunion for the future, and henceforward join together in one common endeavour to alter the hitherto anomalous state of things which had so unenviably characterised it. This was only natural; but as an effort in the right direction, it was certainly to be commended. The many practitioners of which it was composed, had never practically realized how much good might and could be done by the intercommunication of ideas and social intercourse; and the experiment, if it had nothing else to recommend it, certainly possessed the merit of novelty. A feeling of fraternity had been given birth to, which bid fair to grow and strengthen—a disposition of trust and confidence had been evoked, which was alike cheering and comfortable, and the pleasant

prospect of mutual gain lay stretched out before it, which, coming fresh and new, carried the sympathies of all concerned; beyond which was the hope, that by consistency and perseverance, the profession of dentistry would be rescued from the slough of disrepute into which it had fallen, and raised to the level of kindred scientific and useful bodies, a position which it certainly deserved.

Those who were present on that occasion can testify to the desire to have every man's opinion expressed, the consequence being, that words came freely, and many suggestions were supplied for the Committee's use, which have been turned to good account since.

So far, then, three important ends were gained. In the first place, a friendly gathering of the profession; in the second, a desire palpably expressed for unity of purpose for the time to come; and thirdly, a determination to form a distinct body, with laws made by dentists for the regulation of dentists.

What remained, was to fix upon a proper name for the new institution, and to reconsider the laws to which so many had expressed willingness to subscribe. This, as has been said, formed the duty of the Provisional Committee; and, finding themselves so far supported by their brother practitioners, these gentlemen, without one exception, cheerfully undertook the by no means easy task.

What it involved (so far as personal inconvenience was concerned), they knew something of; but the *end* was what they looked at; and the means to arrive at it, though irksome and laborious, were not thought of.

The profession owes a debt of gratitude to this Committee, which, in supporting the College of Dentists of England by influence and good example, it will most effectually, and at the same time most gracefully repay.

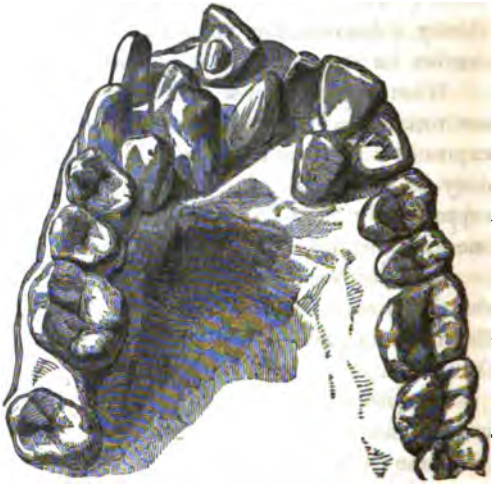
(To be concluded in our next.)

DENTAL SURGERY AND MECHANICS.

EXTRAORDINARY CASE OF SUPERNUMERARY TEETH,

By Robert Thomson, Esq. M.C.D.E.

During the year 1850, I was consulted by a gentleman who had been recommended to me to have some teeth stopped. On the appointed day he came, accompanied by a friend. The latter was about forty years of age, and called my attention to the peculiarity of his own mouth, observing—"I question whether you ever saw such a case as mine?" Upon examining the upper jaw, I discovered in the anterior *eleven* teeth, including the two cuspidati, so that *five* were supernumerary, and the remainder, as may be supposed, very irregular. He consented to my taking an impression of his mouth, remarking, at the same time, that his mouth had been a few years previously "much prettier," meaning of course that it had presented a still more extraordinary appearance, he having had several teeth extracted. I must observe, that there were none of the deciduous teeth remaining in the jaw. The annexed is a representation of the case I have been describing.



ABSCESS IN ALVEOLUS, AND SUPERIOR PALATE FROM RETAINED STUMP, by C. Barrow, Esq.

Mr. —— consulted me three years since respecting an incessant pain which he experienced in the upper jaw. He stated, that some years since he had attempted to extract the left lateral incisor, but the tooth being fractured, from that time he had suffered more or less. I examined his mouth, and found considerable elevation of the palatal bone, corresponding with the position of the retained stump. I at once removed the fang, when there flowed from the cavity about a thimbleful and a half of fœtid pus and ichor; the pain quickly subsided. Upon examination I found the cavity to extend nearly one

inch upwards into the palatal bones, exposing the fangs of the adjacent teeth. The general diathesis of the patient being healthy, and there being no apparent scrofulous, or syphilitic taint, there seemed no indication for treatment beyond topical applications. I accordingly merely ordered the cavity to be kept clean, and lint inserted, saturated with the chloride of zinc and tincture of myrrh. A reverberation of sound being produced in speaking, I adjusted a piece of artificial work with tooth attached. The disease in the bone seems arrested, and the discharge therefrom has lost its offensiveness, though I think it has not entirely subsided, notwithstanding the patient has regularly used the lotion.

How frequent and injurious are the ill effects arising from the retention of decayed stumps in the mouth. The cases of so called tic-doloreux (neuralgia) are, I am convinced, in a many instances, nothing but long-continued irritation produced by these noxious members in the mouth, and can alone be remedied by their removal. A farmer applied to me under the following circumstances:—He had been suffering for a considerable time from a constant sub-acute pain on the left side of the face, for which he had been under medical aid and treated for "tic." He had likewise tried various "patent medicines," but without obtaining relief. Upon examining his mouth, I discovered *caries* in several molars, which I at once extracted, when he experienced immediate and permanent relief. A young lady applied to me the other day, after "doctoring" in vain and suffering for years. I found the gums much swelled and inflamed; the molar teeth, upper and lower jaws, in fact all the teeth, excepting the incisor and canine, in the form of stumps, surrounded with ulcerous sores, some lying loose upon the gums. Upon proper representation, she consented to have those which appeared to me to require removing with the greatest urgency extracted, and the result was, a state of comparative comfort and ease. If the patient can be induced to submit, it is much better to extract them all at one or two sittings; and rather than allow their retention, it will be advisable to administer chloroform, or amylene. I removed from a gentleman's mouth, a little while ago, about fourteen stumps, while in a state of anæsthesia, who for a length of time had been at intervals tormented with abscesses, &c. Since, his mouth has been comfortable and easy. I think the conscientious practitioner cannot too strongly impress upon his patients the great importance of having their mouths freed from these causes of irritation, though I encounter the greatest reluctance when inducing

submission to the correct practice, especially after they have perused the flaming advertisements of charlatans. But this will form the distinguishing characteristic of the educated dentist; he will conduct his practice upon surgical and scientific principles, being assured, that the harvest of success, though longer delayed, will ultimately be more stable, more copious, and more honourable. He will have the consciousness of having exercised his profession for the benefit, and not the injury of his fellow-creatures, and though apparently and at first making slower progress, he will build a reputation as permanent as self-approving.

At some future period I will forward you some remarks on the constitutional injuries inflicted by mouths in this diseased state.

REATTACHMENT OF FANG AFTER EXTRACTION,

By C. Barrow, Esq.

Although generally experience proves the malpractice of reinserting teeth after extraction, yet there are many well-attested cases, where such has been adopted successfully.

Upon the adjustment of a pivot tooth (one of C. Ash & Son's beautiful teeth) with a hickory wood pivot, I had occasion to withdraw the artificial tooth from the fang for a more perfect adjustment with the neighbouring teeth; but the force employed withdrew the fang as well. As the young lady was desirous to avoid a plate in the mouth, and perceiving the adjoining teeth would hold the other securely, I pushed the fang, with pivoted tooth, into its socket in the alveolar. It became wedged by the front incisor and canine, but I secured it further with silk twist. To prevent undue excitement, I ordered the immediate application of leeches and fomentations, and prescribed an aperient medicine, which direction was promptly complied with; and I had the satisfaction to find no further inflammation excited than was necessary for the reattachment of the dental membrane; and although a year has transpired since the operation, the tooth continues firm and useful.

REMOVING BENT PLATES, by Octavius A. Fox, Esq.

It remains a truism, that "the simpler is the better," and thinking, as far as is practicable, we ought to entertain this, in the execution of the mechanical department of our profession, I am induced to offer my method of remodeling bent plates, to the numerous readers of your valuable journal. It is usual to com-

mence to refit, by taking fresh impressions, casts, &c. &c. of the mouth, cutting off all the spills or pivots, and to rebeat, which in many cases, amounts to just remaking. Now, by a very simple plan, I dispense with all this unnecessary trouble, by taking fresh impressions, and the casts as before, or as is usual, remove the teeth, anneal the gold, and pickle it, say for instance, that of a large upper denture or frame. Then fill the casting trough or mould nearly full of tightly-compressed sand, then lay a layer of brown paper entirely over the plate, resting on the cast, letting the pivot wires come through, and with a mallet or hammer beat as hard on cast as you like. It may be necessary to repeat this process with fresh paper, &c. but very seldom have I found it to be required, but have indeed often succeeded with using only a duplicate well-hardened plaster model, or to get the fine edges you can end with one. The paper prevents the sand from lodging on the plate, or rather under the plate and palate, on the cast, and also keeps the pivots in their places; or if any should be bent, a little pliering soon puts them to rights. The plate by this means is ready for the adjustment of the teeth, in their right position, and the polishing soon finishes, what would often prove a laborious undertaking. Sometimes, in half-an-hour, a plate by this simple method is fitted accurately. What I have found a useful expedient to have recourse to, say, after finishing your plate, particularly if an American, or flat teeth-piece, a tooth should be slightly cracked, say on the labial side of a front incisor, is to gently heat the tooth over a spirit-lamp, drop a drop or so of oil, say sperm, hold near the flame of the lamp, and remove, to let gradually cool. No crack will be visible, the oil filling all the interstices of the cracks, and to all intents and purposes, the tooth is as firm as ever, and I think in many cases stronger. This is useful, when time is an object. The last hint, or suggestion, I would throw out is, another to the many only infallible cures for the toothache, and a very simple one for recommendation, namely, consult at once a respectable dental practitioner.

Mr. Thompson, of Denmark Hill, Camberwell, introduced precisely the same method of remodeling some twelve months since.—*Ed. Q. J. D. S.*

PARALYSIS PRODUCED BY DISEASED TEETH.

Susan D——, age nineteen, domestic servant, had been for some time

unable to perform her duty—was suffering from teterine derangement, and supposed to have organic disease of the teterus.

She had taken mercurial preparations during an attack of pneumonia, and their effect had been to produce violent inflammations of the mouth and gums, with loss of vitality of nearly the whole of her teeth. She had suffered from toothache while under the mercurial treatment, but had of late been altogether free from pain; and the presence of so many decayed teeth was attended with but little annoyance.

The teterine disorder was relieved by topical and constitutional remedies, but the relief was of a temporary character only, as the heart was soon the seat of abnormal action; and for several months, a series of metastatic disorders was continued, until the life of the patient was endangered; and those in whose charge she had been, were weary of the trouble and disappointment they had experienced. Under these circumstances I was again requested to see the patient; she had become paralytic of the left side, and had lost the power of articulating. My professional friends were opposed to the opinion I had formed when previously attending the case, and to which I still adhered, that the state of the mouth had much to do with the anomalous character of the disease. The absence of pain in the dental region was offered as an answer to my suggestion that the teeth should be extracted: upon my own responsibility I proposed putting the matter to the test; and having stipulated that I should be allowed to remove the whole of the diseased teeth, I entered upon my task; and before the patient was returned to her bed, I had extracted nine teeth and thirteen stumps.

The result exceeded my most sanguine anticipations, as within forty-eight hours from the operation, a return of sensation and power in the paralyzed limbs were observable, and a few days sufficed for the restoration of her speech. For several years I knew the patient; she married—had several children, and enjoyed excellent health.

W. R. C.

The following simple plan for making a good hard plaster model deserves wide circulation.—A table-spoonful of strong solution of Gum Arabic, mixed with the water prior to adding the plaster, will render it very hard and pleasant to work with.

JAMES BATH.

EXTRACTION UNDER THE INFLUENCE OF MESMERISM

By Dr. Roberts, of Edinburgh.

A week or two ago, a lady called upon me to make an appointment, to have several stumps and teeth extracted, previous to having a set of artificial teeth inserted. Upon leaving the room, she wished to know if I should have any objection to her bringing her "mesmeriser" along with her, that she might be placed under the influence of mesmerism.

I, so far from objecting, most willingly consented, stating my wish to see such an operation; as I had been asked, upon several occasions, to operate under such circumstances, but somehow or other, something ever came in the way, either I had "cross-mesmerised" the patient, thereby causing failure, or some other adverse circumstance had intervened, and consequently I should be delighted to witness a successful case.

According to our appointment, a gentleman appeared, accompanied by the lady.

I had a little conversation with this gentleman, wishing to know if he was quite satisfied he could place his patient into such a sleep as would enable her to undergo the operation without pain. His reply was, he did not think it a judicious plan to put such patients, viz. "mesmeric," into a sleep, as they might suddenly awake, and the shock, in such case, would be such as to prove very hurtful to the patient, but he preferred that his patients should merely have the nerves of the head, and more especially of the teeth, or part operated on so benumbed or deadened, that they should suffer no pain, yet be conscious of what was going on. I was so far satisfied, and replied—"Well, do your part, I will perform mine."

Our patient, a lady of about forty years of age, being seated, the mesmerist commenced his passes, beginning at the occiput, passing over the face and carried down to the knees. After about ten or fifteen minutes of this work, which seemed no easy task for the operator, occasionally directing the points of the fingers to the mouth, he announced that the effect was produced. With the exception of a slight paleness of the features, I could observe no change—the patient looking about as bright as ever; now and then during the passes making an observation, ultimately reclining very composedly in the chair.

On my fixing the forceps upon the first stump, the patient gave an unmistakeable squeak, and shrunk from the instrument. This was repeated upon each application; I looked at my friend; the patient looked at me. After having extracted five stumps, there re-

mained a canine, tolerably firm, but much decayed. Seeing my friends getting rather fidgetty, and willing to give every justice to the case, I, before removing this tooth, said, "Perhaps you would like to renew your influence." He did so, going through the same process, only directing his fingers often to the remaining tooth to be extracted on that day.

I then extracted this tooth, with, on the patient's part, the same appearance of feeling.

During the operation of extraction, the mesmeriser showed great satisfaction, saying, how successful the whole case had been, &c. &c., and wound up his part of the experiment by dispersing the mesmeric influence from the patient after the teeth were removed.

I don't deny I felt rather surprised at this being so successful a case; as, judging from appearances, I should have come to the conclusion that my interesting patient had felt as much pain as if my co-operator had been absent.

A second appointment was made for the purpose of having the four remaining stumps removed from the inferior maxilla; the other case being the superior.

Before leaving me, I asked her to tell me frankly what she felt, as she showed all the usual symptoms of pain; her reply was—"I must tell you, that the last dentist I visited used the scarificator most freely; and if there is anything I *dread* more than another, it is *cutting*." This admission, in my opinion, does not say much for the success of operating under the influence of mesmerism, for if there *is* to be no *pain*, surely there should be no *fear* of pain. "I thought," she continued, "that when you took hold of the teeth, you were going to cut the gums, this caused me to cry out and shrink; and when you took out the teeth, I certainly felt the drag, and supposed you had lost hold of them, but did not know you had taken them out, but I assure you I felt *no pain!* What could I say to this, further than that I was very much surprised?

On the second day following the parties again made their appearance, according to appointment. I need not go over the ground again with particulars; suffice it to say, the same manipulations were gone through—the same remarks made as to success (highly suggestive, I thought). I shall merely add, that the symptoms of sense of pain were more marked, the hands being put up to the mouth, etc., etc. Yet, singular to say, although the patient asked the operator "how she felt so much to-day?" the parties left my house

quite satisfied as to the complete success of the whole case. I may mention, this lady being a "homœopathist," declined my prescription for after treatment of the mouth, saying, she found *mesmerised water* most effective.

I do not make this communication for the purpose of influencing any one for or against mesmerism, as an agent in operations—I merely wish to state the case exactly as it occurred, without prejudice. There is no doubt we all have seen cases where appearances of pain have been strongly marked, such as cries, contortions, &c., while under the influence of chloroform; yet, the patient upon recovery, was quite unconscious of pain having been felt: possibly, the above may be a similar sort of case under mesmerism; Nor is there any doubt of the parties themselves being satisfied with the result of the experiment. I forgot to state the mesmeriser has been in the habit of operating, not only upon this lady, but many other patients for a length of time back, and is, I understand, a "professional mesmeriser."

To conclude, as far as I am myself concerned (doing justice to all parties) I frankly state, anxious as I have been to witness a *bona fide* successful case of operating under the influence of mesmerism without pain, I fear I must come to the conclusion that I have not been fortunate; and although surprised, I cannot say I have become a convert to the "success of painless operations" under such an influence.

THE ADAPTED FORCEPS, BY J. ROBINSON, ESQ.

(Continued from Page 24.)

For the removal of the central and lateral deciduous teeth in the lower jaw, one pair of forceps only is required—a narrow-beaked hawk's-bill forceps. Thus—

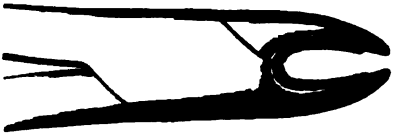
For the canines in the lower jaw an instrument of this description —middle size hawk's-bill is best adapted.

For the removal of the temporary molars in the lower jaw, only one pair of forceps is necessary.

Now for the extraction of the permanent teeth the forceps should be much larger, wider in the grip, and of stronger manufacture. It is desirable to have the blades fastened with a single screw, admitting of slight looseness or play between them, so as more readily to fit the various sizes of the teeth. For the centrals and canines one pair only is necessary.

A smaller pair for the laterals. Thus—

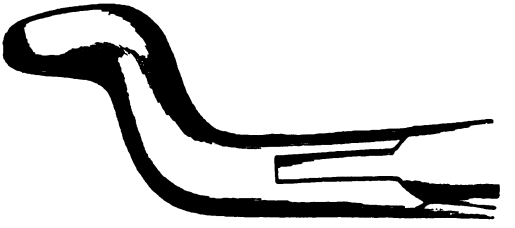
One pair only is used for the removal of the bicuspids, which may either be slightly curved or straight, but narrower in the inner than in the outer groove of the blade.



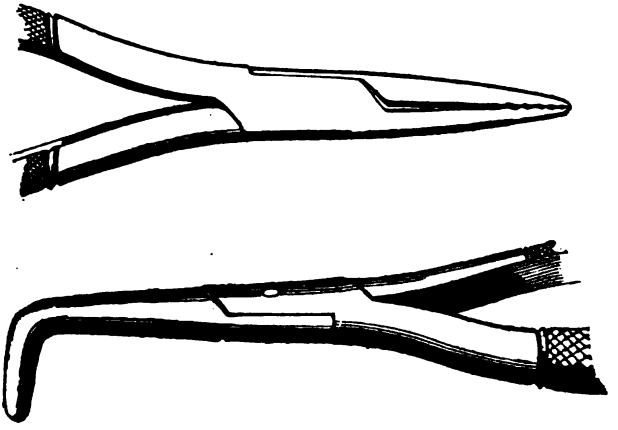
For the first and second molars, the instrument ought to be curved. Some operators, however, prefer curved for the second, and straight for the first molars; in either the outer blade must have two grooves, in the centre of which extends a spine three or four lines above the grooves, in order that when the instrument is applied, this spine may adapt itself between the two external roots. The inner blade should be grooved, with rounded corners to fit the palatine neck of the tooth.

It is well for the operator to be provided with a pair of a smaller size of the same description, and coming closer together at the beaks or points of contact, as the sizes of these teeth may vary, and he might find that in attempting to operate with the larger size he has no grip upon the neck of the tooth, when if the operation were proceeded with, a fracture and a separation of the crown from the fangs would be the inevitable result. In the subjoined cut of the instrument, a curvature takes place from the joint, and extends so far, that in operating it does not injure the lower teeth on the left side of the patient; the handle terminates in a hook, which is intended to pass round the little finger, and gives the operator greater power while in the act of performing the several movements necessary for the extraction of a tooth. Some practitioners, who possess the facility of using the left hand as well as the right, prefer the hook on the right instead of the left side of the forceps.

The *dentes sapientiæ*, or wisdom teeth, of the upper jaw, require for their extraction an instrument bent above the joint so as to form two right angles (as represented below) which enables the operator to see distinctly the tooth whilst operating.



However expert and judicious an operator may be in the use of extracting instruments, he will occasionally find that a portion of the external wall of the alveolar process has been fractured. In this case, it is better to remove the fractured portion than to allow it to remain in the mouth of the patient to go through the process of exfoliation; and impress him and his friends with the idea, that a fractured jaw has been the result of the operation. Any loose portions of the alveolar process may, immediately after extraction, be removed with a pair of bone forceps. In my own practice, when preparing a mouth for artificial teeth, I make it a rule, while the patient is under the influence of chloroform, or otherwise, to remove all the edges and points by the aid of bone nippers. The following engraving represents forceps for the removal of *spicula* of the alveolar process from the upper and lower jaws.



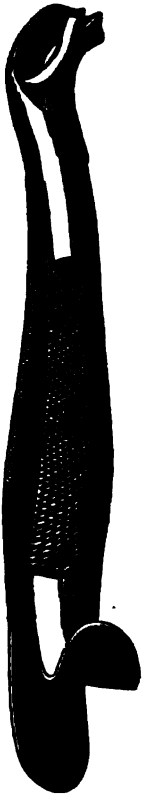
The subjoined excising forceps are used for clipping the edges of the alveolar process—the straight for the anterior, and the curved for the posterior part of the mouth.

For the lower jaw it will be necessary to have the forceps curved at

various angles, and for the removal of the incisors, cuspidati, and bicuspids, hawks-bills of various sizes and angles are essential.

Occasionally, when a bicuspid has been developed within the dental circle, obstructing the movement of the tongue, it will be impracticable to remove the irregular tooth by means of any of the above instruments without danger either to the adjoining teeth, or fracture of the one to be extracted. For this purpose I have constructed the following instruments, which are applicable to either jaw; the smaller beak being intended to fit between the teeth.

In removing the *dentes sapientiæ* in the lower jaw, the forceps should be somewhat curved from the joint, like the former, but not bent to so great an angle as those used for the molars. Those are to be preferred that have a slightly rounded point in the centre of the grooved blades; thus—



The first and second molars are extracted by means of forceps, the outer beak of which is considerably more curved than the inner, both closing in a point so as to reach the bifurcation of the fangs, and so bent from the joints that they clear the upper jaw. This cut represents the instrument with curved handles for the right side of the lower jaw. Some operators prefer instruments with straight handles, and bent at various angles.

(To be continued.)

PAINLESS TOOTH DRAWING, IN FORMER TIMES.

To draw a tooth without pain, fill an earthen crucible full of emmets (ants or pismires, call them by which name you will) eggs and all, and when you have burned them, keep the ashes, with which if you touch a tooth it will fall out.—*Pharmacopœia Londinensis, by Mich. Cullpeper, Gent. Student in Physick and Astrology. Printed by Peter Cole*, 1659.

[By this it appears that the idea of painless operations is not new, and that our ancestors had some faint knowledge that the ant possessed properties which would deaden sensation.]

NOTE.—Formyle is the hypothetical radical of Formic acid. In the red ant (Formica rufa) formic acid was first discovered, and hence its name.—*Professor Simpson's Pamphlet on Chloroform*, 1847.

ADJUSTING LOWER PLATES.

The *Dental News Letter* contains the following observations, by Dr. Patterson, in reference to this subject:—During the six years I was with Dr. Byram, I claim to have seen and assisted in the adjustment of as many complete sets of teeth as usually falls to the lot of a student in dentistry. In that time we (*I* must say *we*, for I had a hand in them all), adjusted over one hundred lower plates, of which all but one had its mate—the upper plate; and that one never gave satisfaction until it was entirely made anew for the third time. Out of the whole number, we put springs on but one: that was for an old gentlemen of sixty years.

We had, perhaps, six of the lower plates to make over, which Dr. Byram attributed to the plates being inserted before absorption of the gums was complete. I will give his manner of adjusting lower plates.

One of the most essential things—and the failure in which is the "rock on which many split"—is to get a *perfect* impression; that is oftentimes a most difficult thing to do, as the wax will in some cases suck itself entirely out of shape in coming off.

To prevent this, in the holders are pierced three small holes of a size to permit the passage of a common broach; one is in the centre of the holder, the others on each side and about one inch from the centre one. Before taking the impression from the jaw, pass a broach through each passage until it touches the ridge of the jaw; that counteracts in a greater or less degree the atmospheric pressure, and as a general thing, the impression, with care, can be taken off undisturbed. Get up the male cast from zinc, the counter-cast from lead, and swage the plate as thick as it is possible. I generally use three or four female casts before I get the plate properly swaged. I always want to see an under plate fit as nicely to the jaw as an upper one. If by pressing on one side of a lower plate, the opposite would rise, I do (and when with Dr. Bryam *had to do*) the work all over until it was a perfect fit. Every dentist knows that in most cases the lower plate has to be very narrow. Dr. Byram used to tell me, "in making an under plate, to cut it until I thought I had spoiled it, and then file off a little more." After trying the plate and being satisfied that the fit is perfect, and that the ordinary movements of the tongue and loose integuments of the mouth will not displace it, proceed to solder around the anterior edge the half-round wire, and the job is ready for mounting the teeth, which is not the least part of the operation by

any means. I consider perfect articulation one of the most essential points in the well fitting of an under plate, especially in mastication.

Another cause of so much trouble from lower plates arises from the great haste which many persons show to "have their teeth" before absorption is half complete, and in some cases actually forcing their dentist to insert the lower plate when he knows that that in so doing he is inflicting an injury upon them, and a still greater one upon himself. Much can be said upon adjusting lower plates, and I hope we shall be favoured with as many articles on the subject as we have upon plate springing, alias "mysterious twistification."

ODONTALGIA: ITS PATHOLOGY AND TREATMENT.

Dr. Togg, in the "American Journal of Dental Science," gives a very interesting and valuable paper upon this subject, of which the following is a summary.

To the form of Odontalgia, which is the result of simple exposure and irritation of the dental pulp, may be given the name of *tooth-ache by direct irritation*. It is characterized by quick, darting pain, and by the suddenness of its invasion and subsidence upon the presence or removal of irritants.

Treatment.—Application of narcotics and anæsthetics to deaden sensation: or vehement stimulation of the exposed nerve to exhaust its sensibility, as by the essential oils of cloves, cinnamon, cajeput. Kreosote is both stimulant and anodyne; combined with morphia in a thin paste, acts well. A thick solution of *gutta percha* in chloroform allays the pain, and forms a coating which shields the nerve for awhile.* Permanent relief is only afforded by extraction of the tooth, or by destruction of the nerve. For the latter, arsenous acid is the most efficient, combined with four parts of morphia to abate the pain. Apply directly to the nerve on a small pellet moistened with kreosote, and covered with a cap (of wax) so as to avoid pressure. Irritation may run on to

Odontitis, or inflammation of the dental pulp. This begins ordinarily with a dull, gnawing uneasiness, (sometimes accompanied by a sensation of heat,) increasing to a severe throbbing pain, the precursor of suppuration. "Should the inflammation extend beyond the pulp cavity, the pain is not increased by pressure on the tooth, nor is the

* A pledget of cotton, saturated with a solution of gum copal in chloroform, answers a similar purpose.

tooth started from its socket. The application of cold to the tooth is also followed by temporary relief." The intense pain results from the distension of the capillaries of the pulp from the inflammation, and the unyielding nature of the cavity; the increasing engorgement being attended by increased pain, which is not relieved by suppuration, until the fluid gets exit through the fang, or the pulp becomes disorganized—the pus only increases the pressure on the nerves. Excitement of the heart and arteries is also apt to increase the pain. Like other inflammations, it has exacerbations at night, owing partly to the recumbent posture, and also to the warmth of the head imbedded in pillows. The pain is modified by temperament, and by the condition of the tooth. The *acute* form of inflammation of the pulp "extends to every part of the pulp and lining membrane, and terminates usually in suppuration. It is more common before than after exposure of the pulp." The *chronic* form usually results from exposure of the pulp, and is not so painful as the acute; sometimes there is little or even no pain.

The *Treatment* will be, to extract the tooth, to destroy the nerve, or to subdue the inflammation by antiphlogistics—to be determined by the amount of pain, progress of inflammation, condition of the surrounding parts, value of the tooth, &c. If the inflammation has proceeded too far for arrest, or the lining membrane become exposed, and the object is to preserve the tooth, the nerve should at once be destroyed. "If the tooth is not eroded, or if the inflammation is not caused by the direct application of irritants to the exposed pulp, the antiphlogistic treatment may succeed"—leeches to the gums, saline cathartics, and rigid abstinence. When suppuration has occurred—indicated by the tooth appearing longer than the rest, loose, and very sore—the tooth may be drilled (as recommended by Dr. Hullihen) to evacuate the pus.

Peridontitis, or inflammation of the investing membrane of the tooth, is closely allied to the preceding, and may be produced by the same causes. But it is more likely to be metastatic. The pain is first dull, then acute and throbbing. There is soreness and elongation of the tooth, redness and swelling of the gums, and sometimes of the cheek. "In both these forms of odontalgia we may have all the accompaniments of inflammation, such as constipation, headach, dry skin, flushed cheeks, full and rapid pulse; in short, inflammatory fever." The treatment is very much the same in both.

Fungus of the nerve is a growth in the nerve cavity in which the

nerve has suppurated, and probably originates from a remnant of the dental blood-vessels. It is of a deep red colour, soft, bleeds readily and freely, sometimes insensible, at others highly sensitive. It may be small and deep in the fang, but generally protrudes, filling up the cavity formed by *caries*.—(Hullihen.) It must be destroyed by the actual cautery. By bleeding it freely, the pain may be relieved.

Odontalgia may also proceed from exostosis. Remedy, extraction.

More general causes of *Odontalgia*. Intermediate between the foregoing, and the causes now to be considered, is a nervous condition, in which the general sensibility is so exalted that slight causes induce severe pain.

Neuralgic toothache may proceed from any affection capable of producing neuralgia elsewhere. Among the intrinsic affections may be mentioned *neuritis*, or inflammation of the nerve or its neurilemma; engorgement of the vessels of the nerve; venous congestion. Any pressure of the nerve along its course, as from exostosis, aneurism, tumour or foreign body, may produce neuralgic toothache. The teeth are often implicated in attacks of facial neuralgia or *tic douloureux*, which may depend upon similar causes. In a case of this disease, the Gasserian ganglion was fibro-cartilaginous, and as large as a nutmeg. Or the disease may depend upon disorder of the encephalon, affecting the fifth nerve at its origin.

This general neuralgia of the face may result from the irritation of a diseased tooth—by *radiation*, or "that power of the nervous centres, by which they disperse an impression made at one point over a wide circuit," or by *transferrence*, by which an impression at one point is felt at a remote one. This irritation of a ramussle of the inferior dental nerve may arouse central disturbance, and be *radiated* over the whole face and head; and (illustrative of the law of transference), in a case of Mr. Lawrence, "neuralgia of the *thumb* was caused by the pressure of a *pivot tooth on the nerve of an old fang*."

The teeth may also suffer those strange wandering pains which characterise the masked intermittents of malarious districts. Universal *malaise* generally accompanies the disturbance. "As the disease advances, the periodic element gradually retires, and the neuralgic becomes unduly prominent."

The pain of neuralgic toothache is usually acute, something mild at first, gradual in its increase and decline, usually irregular, (moderate, slow, or darting through the dental arches), sometimes regularly in-

termittent. When it occurs in sound teeth it is paroxysmal, is attended with little or no swelling, and occupies a considerable portion of the jaw; "and especially when it alternates or is associated with pain of the same character in other parts of the face, there can be little doubt as to its real nature."

The *Treatment* will vary according to the cause. If the disease depend upon exaltation of general sensibility, nervous or vascular derangement, disturbance of the nervous centres, malarious poisoning, etc. it must be combatted by general treatment adapted to the condition of the case. In obstinate cases of local neuralgia, M. Roux recommends, if the inferior nerve be involved, trephining the lower jaw, so as to reach the nerve: he then severs it, and passes a stick of potassa fusa up and down the canal, so as completely to destroy it. For the superior nerve, an incision is made upon the cheek, and the caustic introduced as deeply as possible along the infra-orbital canal. Local sources of the disease, as pressure on the nerve for tumours, irritation from diseased teeth, etc. must be looked for, and the cause removed.

Sympathetic toothache.—"The nervous connections of the teeth are so numerous and so extensive, that we need not be surprised at the wide range of their sympathies. The fifth nerve, supplying the whole face and all the organs of the senses, brings them in relation with the entire head. But besides this, they have special connections with many of the more important organs of the head. Meckel's ganglion and its branches, forming a sort of sympathetic centre for the entire head, is directly connected with the superior maxillary nerve, just as it is about passing into the infra-orbital canal for the supply of the upper teeth. With the ear they are still more intimately connected through the otic ganglion, which rests upon the inferior maxillary nerve, at its exit from the foramen ovale. This union will explain the extreme frequency of earache in children at the period of second dentition, and the toothache which sometimes attends it. The same ganglion, by means of the tympanic plexus which is so directly connected with it, brings them in relation with the glosso-pharyngeal and the pneumo-gastric nerves, and so established a sympathy between these organs and the whole upper portion of the alimentary canal, and with the lungs. Through the sympathetic system these connections are indefinitely extended. With the spinal cord they have not only the union, through the origin of the fifth nerve, with the spinal bulb, but also through the numerous filaments of the sympathetic which are connected with the spinal nerves. Thus we find that, through this

intricate web of sensory filaments, the teeth are directly or indirectly united with every organ in the system.

"During certain conditions of the system, therefore, it is not surprising that these sympathies should be roused to undue activity. Many diseases have the power of inordinately exciting nerves remote from the organ affected. The various disturbances of the alimentary canal are remarkable for this peculiarity. The anatomical connection between the stomach and bowels, and the teeth, already glanced at, sufficiently prepares us to expect toothache as an occasional accompaniment of disorder of the apparatus of alimentation.

"*Pregnancy* is another state which is very liable to excite sympathetic toothache. This is indeed but a part of those numerous remote disturbances which are caused by the peculiar condition of the uterus at this interesting period. All the organs of the abdomen are involved in that intricate net of nervous filaments which are ultimately distributed to the uterus. The two great cords of the sympathetic which descend from the solar plexus and semi-lunar ganglion, on both sides of the aorta, first unite over that vessel in a plexus which weaves into itself all the various threads of which these cords and the stray fibres which surround them are composed. Having thus knit up the life of the whole abdomen in one intricate interlacement of fibrillæ, the nervous mass then divides into its two hypogastric nerves and their plexuses. These proceed directly to the ganglia of the uterus, sending off great numbers of nervous twigs to all the neighbouring organs, and wrapping all the pelvic viscera in their labyrinthine threads. In this manner is the great organ of reproduction brought into relation with the entire frame. During pregnancy, as has been clearly demonstrated by Dr. Lee, the nervous system undergoes the same change to which all the other structures of this organ are subjected. They increase in size, and this increase extends even to the cords which descend from the semilunar ganglia. There are, therefore, both anatomical and physiological reasons for the extensive range of sympathies possessed by the pregnant uterus. The close contact of the semilunar ganglion with the stomach, and the relations between that organ and the teeth, explain how these may be involved."

These forms of odontalgia require constitutional treatment, which must be left to the judgment of the practitioner in each individual case.

Rheumatism and *Gout* may also affect the teeth. Of the latter, an interesting case is recorded by Dr. Harris in his Principles and

Practice of Dental Surgery. The treatment must be directed towards the general disease.

TREATMENT OF ALVEOLAR ABSCESS.

By Prof. White.

Master G——, 14 years of age, good constitution, applied to us in the summer of 1846, suffering from severe abscess of both the superior front incisor teeth, in which the nerves had been destroyed for some time by a blow, and which had also broken off the median angles sufficiently to almost expose the nerve cavities. The teeth were extremely loose and discharging pus at several points around their necks, between the gums and the teeth; so much were the teeth loosened by the suppuration, that it was feared they would drop from their sockets: we were desired to extract them, as it was not believed that they could possibly be saved by any treatment. We lanced the gum at two points, about half an inch above the margin, opposite the ends of the roots, and deep enough to meet the pus sacks, into which we inserted tents of cotton, in order to effect a drainage of the pus in a new direction, so that the gums might contract and heal, or grow to the necks of the teeth again, if they had not lost their vitality entirely: our expectations were fully realized; in a few days the pus ceased discharging around the necks of the teeth, and escaped entirely through the openings which we had made in the gum. The gums grew firmly to the teeth, and the swelling subsided rapidly, and in a few weeks the tents were left out. Those tents of cotton were renewed every other day. They were made by rolling a small portion of loose cotton between the fingers, making one end larger than the other, a kind of bullet-headed roll; the larger end was introduced into the opening a considerable distance, and the smaller or tail end remaining out about a quarter of an inch, so as to afford a hold by which to withdraw them when desired, and to prevent the lips of the wound from closing. In this way a complete drainage of the parts is constantly kept up upon the principle of the *seton*, until all irritation is reduced, and the *piogenic* membrane over the apexes of the roots is entirely absorbed, when upon the withdrawal of the tents the sinuosities *may*, and they generally *do*, heal entirely. At this time, when the gums had healed, the pulp cavities were both opened from the fractured surfaces, which showed some signs of decay; the internal walls of the cavities were also considerably decayed; they were thoroughly cleansed, and plugged to the apexes of the fangs with gold. They have not given the slightest pain or sign of abscess up to

this time. The gums present a slightly blue appearance, but the teeth are as firm in their sockets as any teeth in the mouth. The teeth seem to have *less* motion than is usual in health, from the fact that there seems to be less vascularity about the parts than is usual in more healthy teeth. There is no thickening of the gums, but rather an impoverished look. This method of treatment presented itself to our mind in the spring of 1839, when we first resorted to it in treating two front teeth roots, for a surgeon in the United States Navy, and which was entirely successful. The abscesses never returned, but the roots were removed within a year past, from having become too much decayed to hold pivot teeth. These cases furnish several important and exceedingly interesting considerations in the treatment of alveolar abscess; and first, that of diverting the discharge of the pus by a new channel to save the life of the tooth. We are treating two cases of the kind at present, and have treated a very great number from time to time. Secondly, maintaining the mouth of the wound or orifice open, so as to favour the constant escape of the pus as rapidly as it is secreted in the sack, and concentrating it to one point, and preventing burrowing through surrounding parts, and of obtaining the advantage of capillary attraction through and around the tent of cotton, in the same way that the drainage of abscesses is accomplished by the surgeon in other parts of the body, such as in the treatment of scrofulous abscesses of the scalp. Again, how will the reunion of the gums to the necks of the teeth be explained by those who contend that the teeth become foreign bodies when their pulps are destroyed? In these cases the pulps were entirely dead, and the external membranes of the roots for a time nearly dissected away by the escape of pus. Some of our eminent surgeons and dentists are in the habit of lancing abscesses of the gums every day for a long time, from the fact that the wound heals as soon as the tension of the parts is relieved by the first discharge of pus; of course, a tent of cotton should always be introduced into the wound, in lancing any abscess.—*Dental News Letter.*

TUMEFACTION OF THE SALIVARY DUCTS.

A disease somewhat uncommon, yet not sufficiently so to admit of being overlooked, is the tumefaction of the mouths of the salivary ducts. The only case ever coming under our own immediate observation had its location at the side of the frænum linguæ, as follows. We give the case and treatment:—

The first feature, as described by the patient, was a scarcely apparent sac or membranous bag; this gradually increased in size, being filled with the secretion of the gland, until it caused not only alarm, but interfered seriously with the process of mastication.

On application for treatment, we struck a lancet freely into the sheath, which, as expected, was followed by profuse discharge. Concluding the difficulty thus ended, the patient was dismissed.

A second time, however, the case presented itself; the tumour had not only reformed, but was of increased dimensions, and more important aspect.

Before resorting to a second operation, we felt disposed to consider the cause of failure in the first, and on the conclusions arrived at, founded a simple surgical, and most successful treatment.

The mouth or mouths of the gland being abnormally closed, prevents the egress of the secreted fluid, which collected fluid increasing in quantity, raises or tumefies the obstructing part. This swelling would necessarily increase until the over-distended sac should burst, or a diseased action of the gland be engendered; the latter of which results would be least desirable. Lancing the part, whilst it gives a present immediate relief, it becomes evident, on reflection, is but a doubtful operation as regards the permanency of cure, as the severed parts, by the proximity admitted in the discharge of the contents of the sac, by first intention, almost immediately cohere or heal.

Founding the operation on these conclusions, we excised nearly half the tumour, and by the employment of caustic prevented the possibility of a second healing. In a few days the protruded part contracted to a normal position, and the case remains a permanent cure. —*Ibid.*

CHEMISTRY.

In an Introductory Lecture by G. Watt, reported in the *Dental Register of the West*, the lecturer thus speaks of Chemistry in connection with dental practice:—Let us then, for a short time, consider its relation to, and its influence on, the science of our own profession. And here you will allow me to premise, in the language of another of your professors, " that it has done more to develope and

advance dental science than any other agency." Before its dawn, the nature, and of course the treatment, of the principal diseases of the dental organs were veiled in darkness and mystery. Even dental *caries* was supposed, by men of undoubted ability, to be produced, as that in other bones, by internal inflammation. This science teaches us that it always results from external chemical action; it detects the causes, demonstrates their action, defines their origin, suggests the remedies, and prepares them to our hand. And in the selection of materials to fill the cavities of decay, and restore the contour of the tooth, it manifests no sordid meanness; but directs us to those noble and indestructible metals, gold and platinum, discarding the whole category of alloys, amalgams, mineral pastes, etc. which none but the unprincipled, and those ignorant of the fundamental truths of this science, ever think of using.

This science teaches the dental surgeon the precise condition of the various secretions with which he is concerned, their deleterious influence when abnormal, and points out and prepares the appropriate remedial measures.

The same science selects the most suitable and only fit materials for artificial basis—prepares them for the mechanical dentist, and instructs him how to use them. It rejects the dead human, animal and ivory teeth; and, from the bowels of the earth, brings up the flinty rocks, and the metallic oxyds, and from their combinations, manufactures the pearly gem, surpassed only by the Creator's gift, the living teeth.

But it is needless to specify. A correct knowledge of chemistry will guide you safely in the paths of dental truth; while those who neglect her teachings, or spurn her advice, are left to grope their way through bogs of ignorance, prejudice and error.

ON THE USE OF AMALGAMS.

Mr. Osmond, in the *Dental Register of the West*, advances the following theories in reference to the employment of amalgams:—As when two metals, one of them having a greater affinity for oxygen, or a corroding agent than the other, are brought into contact, and exposed to the action of fluid, possessed of even a very small degree of acidity, galvanic action is produced; it follows, that in fillings of this kind, it must necessarily occur; and this will inevitably decompose any saline substance which may be present in solution in the fluids of the mouth.

Thus—chloride of sodium, which is an article of daily use, and

also exists in healthy saliva, will necessarily be decomposed by such action, and the chlorine being liberated, will, whilst in a nascent condition, unite with the mercury of the amalgam, and in consequence of its well known tendency to unite with it in such proportions as will form corrosive sublimate, dangerous constitutional symptoms may be produced in consequence of the solubility of that salt.

Now it is urged by some, that the mercury is in chemical combination with the other metals. Admitting this to be the case, it is also certain that loose mercury is present, waiting to be set free in the form of vapour, or to unite with any free acid in the mouth, for which it has an affinity, and so to become the positive pole of a galvanic battery.

Further, it is well known that all alloys have a greater tendency to oxydize than single metals, and amalgams possess this in a marked degree. For example: expose a looking-glass, the back of which is coated with amalgam, to the action of gases in a damp atmosphere, and how soon will it be observed to lose its reflecting power, and become tarnished by streaks of oxyde between the surface of the glass, and that of the amalgam next to it—how then can we expect it to resist the action of the saline fluids, and gases of the mouth? and is it any wonder that the oxydation goes on as well upon its internal surface as upon its external one?

Hence, as the mercury is removed from the amalgam, the surface of the plug assumes a dark colour; and as the action of the chlorine extends its influence along the borders of the cavity, it is slowly, and surely, according to the state of the buccal fluids, removed from the internal surface of the filling, leaving it also as black as the external surface, and the walls of the cavity exposed to the action of the retained, and consequently vitiated fluids of the mouth.

Now, let us suppose the mercury all removed by the above process, and what have we left? A plug lessened in size, and acid fluids around it; the dentine has become the positive pole of the battery, and the plug the negative. As a consequence, the dentine is rapidly dissolved by the acid fluids contained between it and the plug.

In proof of this position, we have only to look at the fact, that when a plug of any description becomes loose or porous, or from want of cleanliness, the surface of a tooth, in contact with a filling, is suffered to retain acid fluids, in contact with both, galvanic action is

produced, and the destruction of dentine frequently goes on more rapidly than before a filling was introduced.

Further, the presence of a metal is not necessary to the production of galvanic action; for, when two conducting bodies, whose affinity for a corroding agent is different, are placed in contact, it is produced; and this seems to account for the great destruction of dentine, which is found beneath very minute holes in the enamel, and which is particularly observable in *caries* of the central depressions of the crowns of the molar teeth.

In such cases, the dentine seems to be the positive pole, being more easily acted upon than the enamel, and in this manner protects the latter, to some extent, from the action of the corroding agent.

Hitherto I have only alluded to the action of chlorine in a nascent condition, but when it has no substance to unite with in that condition, hydrochloric acid is produced at the expense of the water of the saliva, and dissolves the dentine around a plug with rapidity. We have also the septic acid, acetic acid, and others, which are well known to possess the power of destroying the integrity of the enamel and dentine, when applied to them directly, or when liberated from salts which contain them.

It is contended by some, that an amalgam plug never shrinks, and that in certain cases it does not become loose. Well, admitting this to be so, for argument sake, I shall proceed to show, that shrinkage, in its common acceptation, is not necessary to cause oxydation of the internal surface of a filling, for as the mercury finds its way out of it, it is left of a porous texture, more or less, and consequently as the ends of the minute pores through which the mercury passes are presented to the walls of the cavity, it retains its position there until the destruction of the dentine around causes it to become loose. This spongy texture is easily observed in the oxyde upon its internal surface.

ON THE PREPARATION & PROPERTIES OF MANGANESE.

By C. Brunner.

After indicating how he obtains pure sulphate from the native peroxide of manganese, and converts this into fluoride, the author states, that the reduction of the metal is effected exactly like that of aluminium. A Hessian crucible is half-filled with alternate layers of fluoride and sodium, in thin plates of one to two millims—one part of sodium to two parts of fluoride; the mixture is carefully pressed with

a pestle, to leave as few interstices as possible, covered with a layer of dry chloride of sodium, of about half the height of the mixture, and the whole is covered with a layer of fluoride of calcium, in fragments of the size of a pea. This serves to prevent the mixture from being projected from the crucible by the violence of the reaction.

The crucible, thus charged and covered with its lid, is placed in a furnace communicating with the draught of a forge or a ventilator, and gently heated at first. Long before the incandescence of the crucible the reduction takes place. It is indicated by a hissing in the interior of the mass, and a yellow flame rising from the crucible. The heat is then increased and brought to whiteness. A quarter of an hour in all is sufficient. The apparatus is allowed to cool by stopping all the apertures of the furnace, and on breaking the crucible the reduced metal is found in a single ingot at the bottom.

Borax, it appears, cannot be used as a flux, as it alters the metal considerably.

Manganese thus prepared possesses properties essentially different from those usually attributed to this metal. Its colour is like that of some cast iron; it is brittle, and presents no resistance to the hammer, or other mechanical forces; it is very hard, not yielding to a steel file, but, on the contrary, scratching the best tempered steel. It is capable of the most perfect polish. It is not altered even in moist air at the ordinary temperature. Polished fragments kept in the laboratory for two months lost none of their brightness. When heated upon platinum foil, it acquires nearly the same colours as steel, passing afterwards to brown, by covering itself with a layer of oxide. The sp. gr. of different specimens varied from 7.138 to 7.206.

It is not attracted by the magnet, even when in powder, and has no influence on the magnetic needle. Acids attack it violently. In concentrated sulphuric acid, in the cold, it only causes a very slight evolution of gas, which appears to be merely hydrogen, from the water contained in the acid. Heated with this acid, it produces sulphurous acid and dissolves. Dilute sulphuric acid dissolves it readily in the cold.

Nitric acid dissolves it rapidly, as does also muriatic acid, even when diluted with much water, as well as acetic acid.

Manganese thus prepared will no doubt find applications in the arts. An acute-angled fragment may replace the diamond for cutting glass, and even for working in steel and other metals. It may be

useful to engravers. The polish of which it is capable appears to render it applicable to optical purposes, such as the mirrors of telescopes. It cannot be forged, but may be cast as easily as iron. Its alloys may probably present useful properties.—*Comptes Rendus and Chemical Gazette.*

A NEW POISON.

M. de Luca has just communicated to the Academy of Sciences the discovery of the poisonous principle of the *cyclamen Europeum*, or common sowbread. This tuberculous plant has long been used in medicine as a violent purgative, and externally as a resolvent, and a remedy for the earache; but it was not known that it contained a powerful poison, producing effects not unlike those of the curara, which the Indians of the Rio Negro use to poison their arrows with. M. de Luca obtains it by digesting the root for forty-five days in alcohol, then pounding the root, digesting it again in a fresh quantity of alcohol, and repeating this process until the pulp had lost its acrid taste. All the tinctures thus obtained are then left to spontaneous evaporation in a cellar. At the end of about forty days a whitish substance is deposited, which, after being repeatedly washed in boiling alcohol, is left to dry in the dark. The cyclamine, or vegetable base of the cyclamen, thus produced, is white, opaque, and brittle, and emits no particular smell; it absorbs the humidity of the air, becomes transparent and gelatinous in water, and assumes a dark colour when exposed to the action of light. It is a curious fact, that while pigs can eat any quantity of the root with impunity, not only the active principle itself, but even the natural juice of the root, acts as a poison on small fish, if mixed with the water in which they are, in the proportion of one to three thousand. Four grammes of the juice injected into the trachæa of a rabbit, caused it to die in convulsions in the course of ten minutes. Bromine appears to be an antidote to this poison, or at least to mitigate its effects considerably; it has the same neutralizing power over the curara poison.

NOTE ON CRYSTALLIZED CHROMIUM AND ITS ALLOYS.

By E. Fremy.

The object of the author's investigations was the comparative examination of iron, manganese, and chromium, which form a true chemical family, and the determination of the influences which may cause the properties of these metals and their alloys to vary according to the mode of preparation. He ascertained that manganese and chromium

were obtained in a state of absolute purity by Wöhler's process, by submitting their anhydrous chlorides to vapour of sodium. The decomposition is effected in a porcelain tube heated to redness; the metallic chlorides are placed in little trays, and the vapour of sodium is carried in by a current of hydrogen. Under the influence of the alkaline chloride produced, and perhaps also by the action of the current of gas, the reduced metals affect regular crystalline forms.

Chromium forms crystals which possess great brilliancy when freed from the alkaline chloride; the crystals belong to the cubic system. They are very hard, and possess the curious property of resisting the action of the most energetic acids, and even nitro-muriatic acid.

These facts, resembling those recently ascertained by Deville regarding aluminium, show that many elements are still wanting to establish a natural classification of metals.

The alloys of chromium with other metals often possess the hardness of chromium, and like it resist the action of concentrated acids. The alloy of chromium and iron was obtained either by reducing chromate of iron with charcoal, or by heating iron and pure oxide of chromium in the forge. This alloy crystallizes sometimes in long needles; it resembles brass, and scratches the hardest bodies.

The green sesquioxide of chromium may be easily fused at the heat of a forge, when it is converted into a black crystalline mass which presents all the characters of the crystallized sesquioxide of chromium obtained by Wöhler by decomposing chlorochromic acid by heat. This fused oxide may be obtained in considerable quantity; it readily scratches quartz and tempered steel; and, as well as the alloys of chromium, it may find some applications in the arts.—*Comptes Rendus and Chemical Gazette.*

Division by the Leyden Deflagration.—When a gold wire is deflagrated near the surface of glass plates by a strong electric discharge, it is dissipated in minute particles, which are deposited on the glass. These are seen by the microscope to be of different sizes; but by far the greater part are so minute as not to be distinguishable separately. The general film is of different colours by transmitted light, being grey, violet, or green; and often on the central or nearest part of the discharge, where the heat has been active, it is of a fine ruby colour. All these particles act with acids and chemical re-agents as gold acts; and there is no reason to believe they are anything other

than metallic gold. They appear with precisely the same colours and characters, whether the deflagrations are made in common air, in oxygen, or in hydrogen; and whether the deposits are formed on glass, rock-crystal, topaz, or mica. When heated by any ordinary means, the green and grey parts change to a ruby-amethystine colour, and that whether surrounded by air or vapour of alcohol or ether. Even after heating, they adhere only as a dust to the plates, except when the temperature applied to those on glass has been very high. Agate pressure confers the green character on the heated deposits, and also, in frequent cases, upon that which has not been heated. All things considered, there can be no reason to doubt that the deposits thus made to vary in the colour of the transmitted light, consist of pure metallic gold.—*Pharmaceutical Journal.*

Sulphate of Zinc as an Escharotic.—Dr. Watson in the Glasgow Medical Journal, states, "My friend, Dr. M'Ghie, had the sulphate of zinc fused and run into moulds, and in this form it was applied to several ulcers, acting as a good but very painful escharotic. On the suggestion of the same gentleman, I gave a trial to the bisulphate of potash as an escharotic. I employed it in the form of powder, and also in that of an ointment with glycerine, but its action was found to be very feeble; it gave little pain indeed, but the sloughs were very slight and long of separating. I then used a mixture of the sulphate of zinc and bisulphate of potash; this mixture acted more powerfully than the bisulphate alone; but its action was probably due to the presence of the sulphate of zinc, the other ingredient only acting as a diluent. In one case I had the powder of sulphate of zinc mixed with gypsum, in the manner in which Dr. Ure long ago applied the chloride of zinc, and I believe this to be a useful mode of applying it; the action of the escharotic is thus rendered more gradual, and perhaps less severe than when applied in any other form."

Artificial Sapphires, Crystals of Alumina.—M. A. Gaudin recently communicated to the Academy of Sciences a process for obtaining alumina (the clay which yields the new metal called aluminium) in transparent crystals, which therefore present the same chemical composition as the natural stone known under the name of sapphire. To obtain them he lines a common crucible with a coating of lamp-black, and introduces into it equal portions of alum and sul-

phate of potash reduced to powder and calcined. He then exposes it for a quarter of an hour to the fire of a common forge. The crucible is then allowed to cool, and on breaking it the surface of the lamp-black coating is found covered with numerous brilliant points composed of sulphuret of potassium, enveloping the crystals of alumina obtained, or, in other words, real sapphires. The size of the crystals is large in proportion to the mass operated upon; those obtained by M. Gaudin are about 3-100ths of an inch in diameter, and half this in height. They are so hard that they have been found to be preferable to rubies for the purposes of watchmaking.—*Medical Circular.*

Chlorate of Potassa.—In seventy cases of stomatitis and ulcers of the mouth, Professor Hauner used this remedy with constant success. The results were wonderful; for in four hours the disagreeable odour of the mouth disappeared, and the cures were rapid. Water ℥iv; simple syrup ℥ss; chlorate of potassa ʒj; mixed, and used in twenty-four hours.—*American Medical Journal.*

HOSPITAL CASES.

Pathological Society—Villous Growth on the Dura-Mater. By S. W. Sibley, Esq.—This specimen was a growth the size of a small nut, which sprung from the dura-mater near the face. There was a depression on the surface of the brain opposite the tumour, but no disease of the substance of the brain. The patient from whom it was removed had died in the Middlesex Hospital, under the care of Mr. Shaw, with cancer of the uterus. There were no symptoms connected with the growth observed during life, nor was there any secondary cancerous growth noticed after death. In structure, the growth was composed of a number of little villi. In addition to the epithelial cells usually found in these growths, there were several "laminated" and "brood" cells.

Removal of the Eyeball.—This operation has been performed in six cases. In all, the patients recovered well. In three, it was on account of a lost eye being a source of sympathetic irritation to the sound one; and in the other three, on account of malignant disease. In one of the latter, occurring in a seaman, aged fifty-three, the disease was melanosis in the cellular tissue behind the globe, and the whole contents of the orbit had to be removed.—*Medical Times.*

CASE OF EXTENSIVE CLEFT PALATE CLOSED BY OPERATION.

Under the care of G. D. POLLOCK, Esq. Assistant-Surgeon to St. George's Hospital.

The engraving (fig. 1) is taken from a model of the mouth of a patient who was under the care of Mr. Pollock, in St. George's Hospital, and in whom there existed a cleft through the alveolar ridge, the hard palate, and the soft palate. It will be

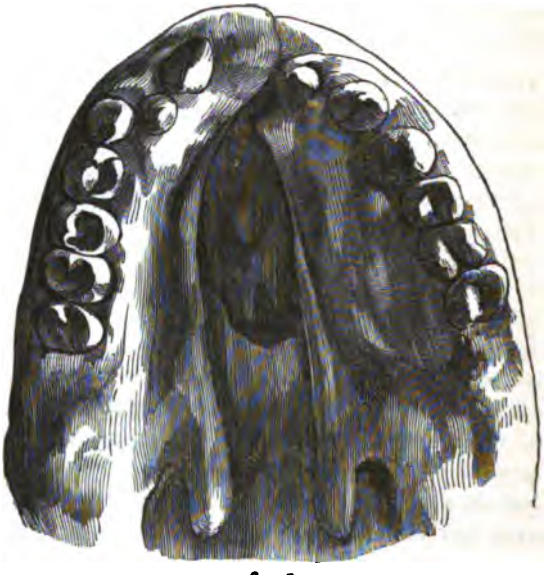


fig. 1.

observed in the engraving, that there was complete fissure through the alveolar arch in front, on the left of the median line, which extended into the nostril; and there was a corresponding irregularity of the upper incisors. Fissured lip existed at birth, with this congenital defect of the bone. The lip was operated upon in early life; and from the appearance of the bone in front, it is probable that a small projecting portion of the latter was removed at the time of the operation on the lip. Above the fissure, through the maxillæ, was to be seen the septum nasi, bent upon itself; it is marked in the engraving by the darkened mass between the edges of the anterior portion of the fissure. In this case, then, the cavity of the mouth opened into the cavities of both nostrils. It only required that the cleft in the alveolar ridge should be double (*i. e.*, one on each side of the me-

dian line, with an intervening portion of bone supporting the incisor teeth), to render this case as extensive a deformity as is met with in these species of congenital defects of the mouth, and one of the most formidable for operative interference.

Articulation with such a deformity is always very indistinct and imperfect. In this case, it was so much so, that, to a stranger, the patient could not make himself understood. This imperfection was increased partially from the loss of one of the incisors, and also from the irregular, short, and stunted state of the other incisors; for, in talking, the tongue was constantly thrust forward, with the endeavour to make good this deficiency. The soft tissues covering the bony palate were sufficiently plentiful to justify an attempt to close this portion of the fissure; and the soft palate was so pliant and abundant, that there appeared no doubt of securing a good velum, if union followed the usual operation for uniting this portion of the cleft.

The first operation was confined to the anterior half of the hard palate. Without any difficulty, or loss of much blood, the soft structures were dissected from the bones, from within outwards; and, when they were sufficiently liberated, and the edges touched in the middle line, three sutures were passed, in order to keep the edges in apposition. Though the posterior portion of the hard palate was not brought together by sutures, there was some portion of it separated from its bony attachments, in order to allow the anterior half to come together without any restriction posteriorly. If an attempt be made to unite the whole extent of a fissure, such as we have in this engraving, the extensive interference with the attachments of the soft tissues necessary to bring the edges readily together, so greatly interrupts the supply of blood, and endangers the vitality of the separated portions, that there is considerable risk of union by first intention not taking place, or of the flaps themselves sloughing in several and extensive portions.

This first operation succeeded in closing about an inch and a half of the anterior portion of the fissure. A second operation was performed about three months after the first. The steps of the operation were similar to the former one, and the part operated on was the remaining portion of the hard palate, but not more than an additional half-inch was added to the new palate after union had occurred.

In a short time afterwards, Mr. Pollock decided to operate on the soft palate, and without any difficulty the edges of the fissured velum were brought together; the levator palati muscles being divided

through the palate, in the manner described by him in a paper in the *Medico-Chirurgical Transactions*, vol. xxxix, p. 78. This operation succeeded most satisfactorily.

There now remained an opening in the palate, about half an inch in length, having behind it the newly-formed entire soft palate; in front, that portion of palate which had resulted from the effects of the first two operations on the anterior portion of the fissure. This opening was closed by the fourth attempt, and the edges united satisfactorily by first intention, there remaining for a few weeks a very minute opening, through which the flat end of a probe could be passed; but this is closing, and does not allow the passage of fluids through it.

The engraving (fig 2) shows the present and final state of the mouth after the fourth operation. The models from which the woodcuts have been taken were made for Mr. Pollock by Mr. Vasey, and are accurate representations of the former and of the present condition of the patient.

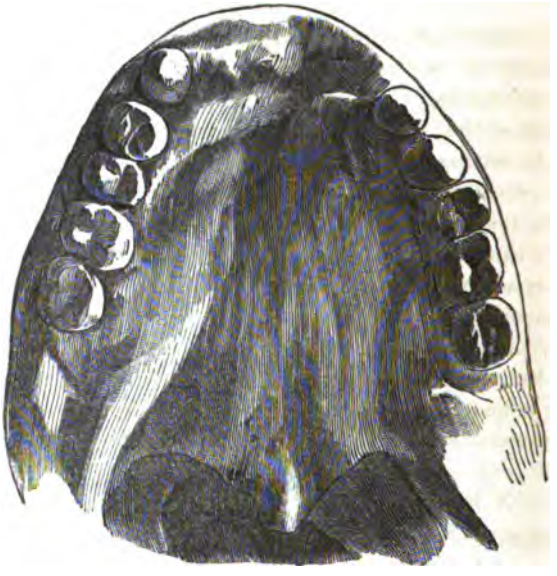


fig. 2.

The defects of the teeth were attended to before the last operation; the stunted and twisted incisors were removed, and some artificial teeth were adapted by Mr. Vasey to the gap which is repre-

sented in fig. 2; so that the appearance of the patient is very materially improved by these alterations. But in addition to this the patient has derived considerable advantages from the filling up of the gap in front, in being able to articulate much more distinctly.

Since the last operation, three or four months ago, he has materially improved in speaking, and can now pronounce many words clearly and easily which previously he could not articulate so as to be understood. The acquisition of distinct articulation is only a matter of learning, when once the patient has a palate supplied to him, if born without one. In this case it is most evident if the patient is watched in his efforts at pronunciation. Not having had a palate for many years, after endeavouring to articulate, he has acquired a habit of using his tongue in a manner different to persons with natural palates in his endeavours to overcome the congenital deficiency of structure; and now that the palate is supplied him he cannot at once adapt his tongue to the new position of structures: for instance, in endeavouring to articulate the letter T, he places his tongue in the position to pronounce E. Never having had a roof to his mouth, the tip of the tongue had nothing to rest against above in his efforts to articulate the T; and consequently it was always placed in the position for pronouncing the E, as being the letter nearest in sound to T. Difficulties of this kind in articulation vary in proportion to the extent of the fissure; but the marked improvement in this case already, certainly encourages the surgeon to hope that, with care and great attention, the worst deformity giving rise to great defect in speech, may be ultimately benefited by operation, even if the patient be not ultimately entirely able to overcome the defects in speech, which he has acquired in his younger years.

A brother of this patient has a cleft of the soft palate, but is at present too young to be operated upon; and it is by no means uncommon to find more than one member of a family the subject of these congenital deficiencies of the mouth.

ON BONY CYSTS OF THE LOWER JAW.

In a Lecture delivered by Dr. R. Adams, of Dublin, which we find reported in the Dublin Hospital Gazette, that eminent practitioner, who is Surgeon to the Richmond Hospital, stated the following case. Andrew M'Donnell, æt. 36, a fisherman, native of the County Wexford, of robust habit of body, was admitted into the Richmond Hospital, under my care, on the 19th of January, 1857.

He had a considerable enlargement of the right side of the lower jaw, which here seemed expanded into an oblong tumour, about the size of a goose's egg. The swelling extended backwards from the angle of the mouth to the back part of the ramus of the jaw. The cheek in the situation of the zygomatic arch and of the coronoid process, projected somewhat outwards towards the sub-maxillary fossa, which was also occupied by a hard swelling, evidently formed by the basis of the lower jaw, which had become increased in its breadth, and had extended itself downwards much below the level of its ordinary situation. A small but movable lymphatic gland could be felt in the sub-maxillary space. On examining the tumour in the mouth the alveolar border of the jaw was seen expanded, so as to be nearly two inches in breadth: the three molar and second of the bicuspid teeth had disappeared, and scarcely a trace could be found on the gum of the place they had once occupied. Upon careful examination in the situation of the coronoid process and lower part of the temporal fossa, it appeared evident that this process was involved in the disease; at the same time, from the free motion of the jaw in its articular socket, it was equally clear that the surfaces of the articulation were not at all implicated. The tumour was remarkably elastic and yielding, yet it did not crackle under the pressure of the fingers, nor convey to the examiner the idea of fluid, but rather of some elastic material contained within a bony shell. The patient did not complain of any severe or darting pain whatever in the jaw, but simply of an *aching* sensation, which was only occasional. He did not wince, when firm pressure was made by the finger on the swollen part. As to the origin of this disease, he said that about three years and a half ago, he got a severe knock on the right side of his lower jaw, the effect of a fall: some short time afterwards, while endeavouring to settle a dispute between two of his friends, one of them struck him with his clenched fist on the very same spot where a few days before he received the injury by the fall. About eight or ten days after this, he felt an aching in the jaw, and then some stiffness in the motion of the joint, at the affected side; and when these symptoms had existed for about fifteen months, he became alarmed, observing one day two small hard swellings on the gum. These gradually, from month to month, somewhat increased. The three molar teeth successively became loose and elevated above their ordinary level, so as to become annoying to him when the jaws closed; he on this account had them extracted; and although the alveoli seemed

to close at once, yet he observed that when firm pressure was made on the swollen jaw, that there oozed out from the alveoli formerly occupied by the fangs of the teeth, a thin fluid which mixed with the saliva. He thought that for the last six months the swelling seemed to enlarge more rapidly than it had done before. A consultation of the surgeons of the hospital having been held on this case, it was agreed that there was only one measure to be thought of to relieve him, namely, the amputation of all that portion of the lower jaw which was included in the disease, and that the condyle should be removed from its socket if it were found necessary. Unfortunately, it was a case in which we were agreed chloroform could not be safely had recourse to, to lessen the sufferings of the patient during the operation.

Operation.—The patient then, on the 4th of this month, February, 1857, was placed in a chair with a high back, and by his own request was well secured in it. The operation was begun by an incision from above, downwards through the whole substance of the lower lip, commencing a little nearer to the middle line than the right commissure of the lip (thus avoiding the commissure chiefly for reasons hereafter to be mentioned). The chain-saw was then introduced behind the arch of the lower jaw, and quickly passed through the bone, the section having been made through the line of the socket of the first bicuspid tooth, which had been extracted two days previously. The next incision through the skin was made parallel to, but a little above the basis of the jaw, towards the angle of the bone at the right side, and this having been continued upwards, in front of, but parallel to, the back part of the ascending ramus, the skin, &c. forming a flap, was dissected off the massetar muscle, and the flap thrown up so as to expose fully the morbid mass of the tumour. The attachment of the masseter muscle was cut through, and the chain-saw was then had recourse to, and introduced behind the inside of the ramus, and the bone cut, across the basis or the neck of the condyle and the coronoid process. The portion of the lower jaw which constituted almost the whole of the disease, was thus isolated and included between the two sections made by the saw. The next proceeding to be undertaken was to disengage the diseased portion of the lower jaw from the surrounding soft parts. This was done by detaching any fibres of the masseter or internal pterygoid muscle which still adhered to the ramus of the jaw, and next by severing the connection of the diseased portion of the bone from the muscles which were attached to the mylohyoid ridge, and connected it with the os hyoides. To effect

this safely and expeditiously, the bone was firmly held in a strong forceps designed for such a purpose; and while Mr. Cusack rotated the bone as much as possible from within outwards, I ran the edge of the knife on the inside of the jaw, along the line of muscle attached to the mylohyoid ridge; and when this attachment of muscular fibres was severed, the bone was easily separated from the surrounding soft parts.

Numerous small arteries which had been necessarily divided now furnished a good deal of blood; some of these were at once secured, and the labial tied, before the last steps of the operation were proceeded with. Having now examined the state of the coronoid process, and of the condyle of the lower jaw, it was plain that these also were implicated, and must be taken away. The incision through the side of the face was then further extended a little upwards, towards the lobe of the ear. The capsule of the lower jaw exposed, we next endeavoured to draw down the coronoid process, which was expanded into a cell, but the altered bony structure gave way in the forceps, and although we were thus enabled to remove the coronoid process, we could not, as directed by other operators, by making use of it as a lever, disarticulate the condyle, and draw this forwards away from the glenoid cavity and vicinity of the internal maxillary artery. I was obliged, therefore, to open cautiously in front, the capsular ligament of the articulation; and I then introduced into the interior of the joint the handle of a tooth forceps, which was used as a lever, and by this means the condyle was safely pushed downwards from its place, and the external pterygoid was divided by a blunt-pointed bistoury, and the condyle was removed. Some delay now occurred in detaching some fragments of the coronoid process, which still remained attached to the temporal muscle. There was, during this part of the operation also, some smart hemorrhage, as the numerous small arteries were divided. When these were secured, and the bleeding ceased, I drew down the flap, and joined carefully the incision through the lip, and then by means of lint and sponge, the wound was dressed, and the patient put into bed. During the day and night the patient had some hemorrhage, but pressure by the fingers sufficed after a time to arrest it. During the night the patient was in rather an alarming state from constitutional irritation; his skin was clammy, his pulse small and weak, 132; he sighed frequently, and had a continued tendency to syncope, and was in an extreme state of mental and bodily depression. For these symptoms he was ordered brandy and wine freely during the night, with 15 drops of the solution of muriate of

morphia, every second hour. After an hour he slept, and when the third opiate draught was taken, which was about half-past two, he fell asleep, and continued so until morning. On awakening, he stated he felt considerably better. His pulse was stronger; but he was still in a condition requiring the judicious use of stimulants. He was fed by means of a gum elastic tube fastened to the mouth of a drinking-cup. It is now February 21st, seventeen days since the day of the operation, and the man seems in perfect health; and one is truly surprised to see such a trifling degree of deformity resulting from removal of so large a portion of the lower jaw. The line of incision in the lip has joined by the first intention, and the greater part of the line, which ran parallel to the basis of the lower jaw and posterior margin, has also been nearly united. In a few days the cicatrices of the whole wound will, I doubt not, be complete.

RESECTION OF PARTS OF THE SUPERIOR MAXILLA.

By Mr. Fergusson: King's College.

Case 1.—A girl, aged 13, in good health, admitted on account of an osseous growth distending the left antrum. It had been observed to be increasing for three years. Excision of the greater part of the maxilla was performed, the cheek being dissected up by a single incision through the upper lip. In the osseous mass was one of the incisive teeth. She recovered well, and very little deformity resulted.

Case 2.—A man, aged thirty-four, admitted on account of a very large osteo-encephaloid growth in the left upper maxilla. It was of twelve months' growth, and he was in much reduced health. An incision through the upper lip only was practised, the cheek dissected up, and the entire maxilla removed. Not much bleeding attended the operation. Death, from a state resembling commencing pyæmia, on the fifth day. At the autopsy, pus was found in the glands and cellular tissue of the neck.

Case 3.—A girl, aged sixteen, under care on account of an osseous growth involving the right upper maxilla and malar bone. The only external incision was through the upper lip. The whole maxilla and part of the malar bone were removed. Recovered well, and left the Hospital about a month afterwards.

Case 4.—A girl, aged ten. The whole right upper maxilla was removed by the usual operation. The disease proved to be tuberculous deposit in the antrum and surrounding bone.

MELANOSIS OF EYEBALL. By J. W. Hulke, Esq.—The eye had been disorganised by violent inflammation twenty years before. Two months before his admission into King's College Hospital, the conjunctiva became red, and two small tubercles appeared on the front of the globe: these burst, and bloody serum escaped. Soon afterwards, a tumour shot out from the front of the eye, rapidly attained considerable size, and projected between the lids. Its colour was dark, and its surface, from which there was a constant sanious oozing, was irregular. The projecting mass moved readily in association with the movements of the other eye. After removal by Mr. Bowman, the growth was found to consist of two parts; a dark blackish, and a light grey portion. Excepting that the cells of the dark part contained pigment, the minute structures of both portions were similar. The shrunken globe was filled with the cancerous growth which had escaped in front, forming the external tumours, and the sclerotic had given way behind the insertion of the tendon of the inner rectus muscle, and also near the entrance of the optic nerve; and in these situations there were small nodules of the tumour outside the globe, continuous with the mass filling its interior. It is interesting to notice at how late a period in the history of the case melanosis has been developed. It appears also, that the free mobility of the tumour was not a sure sign of the sclerotic coat being entire posteriorly.

NECROSIS OF THE CRANIUM.—REMOVAL OF THE DISEASED BONE.—The subject of this operation, a woman about thirty years of age, had been an inmate of the hospital for some time, on account of a diseased condition of the bones of the upper part of the cranium. There were three or four patches of disease, varying from the size of a shilling to that of a crown-piece. One large patch was situated on the frontal bone, and another at the vertex. The integuments had sloughed off and left the bone quite exposed. It had been in this condition about a year, and various plans of treatment had been adopted, for the purpose of favouring the separation of the diseased portions, but without effect. The patient's health was very much impaired, and the disease was probably owing to the injudicious administration of mercury. The only treatment then, that could be adopted with any prospect of success, under the circumstances, was to remove the necrosed portions of the bone; and this Mr. Erichsen did on the 1st inst. He raised the edge of the integuments round the diseased patch with the knife, making a few short incisions out-

wards, so as to form it into flaps, then with the gouge he raised the dead pieces of bone which were confined to the outer table of the cranium. In this manner, all the diseased patches were successively treated; they were then dressed with wet lint, and a bandage put round the head. It was thought that, after this operation, a cure might be effected.

ENCYSTED TUMOUR OF THE FACE.—The subject, a young man, twenty-four years of age, was brought to St. George's Hospital to have a small tumour removed from the angle of the jaw. Amylene was administered, and the removal of the diseased growth was accomplished without any difficulty. No vessels of any importance were divided. When removed, the tumour was found to consist of sebaceous matter, and the cyst in which it was contained was exceedingly thin and transparent. It was considered interesting in this particular, as forming a great contrast to tumours of the kind when found on the head.

EXCISION OF THE UPPER JAW.—The Liverpool Royal: Mr. E. Bickersteth.—A healthy married woman, aged twenty-three, was admitted on account of a solid hard growth under the left cheek, which caused general enlargement of that side of the face. It was of seven years' growth, and had increased painlessly. In the mouth, the left side of the palate was felt to be pushed downwards. It had all the features of an osseous tumour in the maxilla, and the entire bone was accordingly removed by the usual operation. On extricating the bone, profuse hemorrhage occurred from the tearing of a large vessel (probably the internal maxillary), but it was arrested by compressing the carotid until the artery was tied. The patient had afterwards an attack of erysipelas, but in spite of it she recovered well. The tumour, when sawn across, proved to be a bony growth from the antrum, the cavity of the latter being filled, with the exception of a small space capable of holding a pea.

ENLARGED TONGUE AND PARTIAL DISLOCATION OF THE LOWER JAW.—At the Pathological Society, Mr. Chalk exhibited casts and sketches of a young woman, who had suffered from enlargement of the tongue, consequent on a fall and severe bite of that organ at the age of seven. The chief interest of the case was in the fact of the

partial dislocation of the lower jaw, which had been caused by the hypertrophy which had ensued.

The *Medical Times* and *Gazette* reports a case by Dr. Bristowe, of a CANCER OF THE OSOPHAGUS, FATAL BY HEMORRHAGE FROM ONE OF THE INTERCOSTAL ARTERIES.—A married woman, thirty-two years of age, was admitted into St. Thomas's on the 20th January. About a year ago, she first noticed soreness on swallowing, in the mid-sternal region. This continued in much the same degree for about nine months. During the last three months, however, the soreness and pain, and the difficulty of swallowing have rapidly increased, and her health has given way. On admission, she had all the symptoms of stricture of the osophagus, and the symptoms for the first fortnight of her stay in the hospital continued to increase in severity. On the 6th February she vomited suddenly about a pint of blood, and soon became very much collapsed. There was no return of the hæmatemesis, and she sunk and died on the 8th. At the post-mortem examination, a large cancerous ulcer was found at the upper part of the lower third of the osophagus; the surrounding parts were much thickened, and the exterior of the mass was moulded on the aorta and spine, without however, involving either. The surface of the ulcer looked sloughy, and here and there altered blood adhered to it. The second of the intercostal arteries, springing from the aorta on the right side, was found to open directly into the ulcer, at about a quarter of an inch from its origin. The stomach was filled by a large coagulum, and all the intestines contained dark-coloured altered blood. One of the supra-renal capsules was destroyed by chronic disease; the other was healthy. No other disease was found.

THE COLLEGE OF SURGEONS AND THE EIGHTEEN PETITIONERS.

In the last number of our journal, we stated, in reply to a correspondent, that the College of Surgeons had declined to entertain the memorial of the eighteen gentlemen, who, without the shadow of authority, had *secretly* petitioned the college on behalf of the Dentists of England. We did this in the face of very positive assertions to the contrary. The backers of the memorialists had stated that there was every reason to believe the Council of the College would accede to the prayer of the petition; that indeed what was asked for was so reasonable, that learned body could not refuse to grant it. It is quite true, that our well-informed co-temporary, the *Lancet*, had stated it had "not heard that any definite or official reply" had "been vouchsafed to this petition, though twice urged;" but the *Lancet* thought this conduct on the part of the Council of the College "neither politic nor polite."

We believe we made no mistake whatever in the matter: we did not say that any official reply—that is, reply in writing—had been given to the memorialists; but we said what we now repeat, that the Council of the College of Surgeons *declined* to entertain the memorial.

In all the controversy that has taken place with respect to the dental movement, we have not read or heard any defence of the conduct of the eighteen, except from themselves. Even those who have most strongly opposed the establishment of the College of Dentists, have admitted that these dozen and a-half of gentlemen committed an act of unpardonable assumption. They would have had just as much right to speak for the Surgeons of England, as they had for the Dentists; and we have too high an opinion of the distinguished men who sit on the Council of the College of Surgeons to imagine for one moment that they would countenance such an imposition. They have stamped the arrogant pretension of the memorialists with the most withering

brand they could affix to it, by not deigning a reply to their humble prayers; and the Council of the College could have done nothing else, without being guilty of an assumption equally as unwarrantable as that of the petitioners; for by what right could the College of Surgeons deal with the whole body of Dentists, without the consent of the parties to be affected? When driven to it, the eighteen had to admit that they spoke only for themselves—that is, that they had no authority but their own, though they demanded, from a body not entitled to grant it, an act of professional legislation, which was to affect every Dentist in the kingdom. What would have been said of the College of Surgeons had it fiated such a proceeding as that? Why, that it and the eighteen were well matched, and that the sooner a reformation was introduced into its councils the better.

But the sensibility of the memorialists is not easily wounded; and we can only wish that their perseverance were manifested in a better cause. They may think that their urgency is quite a secret, known only to themselves and the ictim of their importunity, the Council of the College; but if so, we must undeceive them. We believe they did not take the gentle hint of more than a year's silence on the part of the College, but pressed the matter till they got the broader one of a refusal in terms; and that then a second application was seriously contemplated, if not actually made. It was thought that the Council might be got to tack on to the medical bills about to be introduced into Parliament, a clause to tack on the dental to the tail of the surgical profession: or if the Council would not go so far as this, it might be asked to give a *promise* to entertain the memorial when one of these bills should have passed. However, we cannot much wonder at this pertinacity, even in so untenable a cause, when we remember the ridiculous position which the contemptuous treatment of their memorial by the Council was sure to bring upon the eighteen; and further, when we consider that some of them might have had the honours of a Dental Examinership at the Board of the College, before the eye of their imagination.

We do not object to any member of the College of Surgeons ambitioning to a seat in its Council; but we, and the Dentists of England, do decidedly refuse to allow such an ambition to be gratified at the sacrifice of the dignity and efficiency of the Dental Profession. As we have before stated, the memorialists are highly respectable gentlemen; and in objecting to their proceedings, we confine ourselves entirely to this one act of secretly petitioning the College of Surgeons on behalf of the Dentists of England. We dare say these gentlemen would be equally efficient at either profession; but they should make their election. If they want to be of the Council of the College of Surgeons, they should reach that elevation by the only legitimate mode, namely, giving proof of their surgical ability, and not by a side wind. If they believe, and we rather think they do, that they best consult their own interests by practising the dental art, then they should not sacrifice the dignity of the Dental Profession, to an ambition for surgical honours.

We know the theory of these gentlemen is, that by an alliance with the College of Surgeons, the Dental Profession would be elevated. But they cannot support this assertion by argument adduced from any fact bearing on the point; for the College of Surgeons has never allowed specialities to rank with pure surgery.

Some dentists, who are also M.R.C.S.'s, assert that every dentist should be a surgeon in the fullest acceptation of the term; but this is simply an absurdity. It is quite true, that each profession must study much that is common to both—but not all. As well might you argue that a surgeon should know how to pivot a tooth, as that a dentist should be competent to cut off a leg. Every common-law lawyer must know the general principles of equity; but it is not at all necessary for him to be master of all the subtilties of equity practice. An attorney need not be a special-pleader, an apothecary a physician, nor a physician a surgeon. Why then should it be contended, that because the dentist ought to know anatomy and other sciences in common with the surgeon, he ought of necessity have a surgeon's diploma?

But to follow up this argument would be idle; and we are glad to perceive that in this point there does not seem to be any difference between the Odontological Society and the College of Dentists. Both agree that there should be a certain standard of education for dentists, which should embrace surgical and mechanical qualifications; but neither advance the ridiculous proposition that dentists need be surgeons. Both societies, no doubt aim at raising the *status* of the Dental Profession by means of proper professional tests. This being so, there ought to be no difficulty in their achieving what they desire. Their united efforts would end in a very different result from that achieved by "the eighteen;" who should really turn their pertinacity to some more useful purpose than that of tormenting the College of Surgeons in the pursuit of a sham. Let the petitioners candidly admit what they must feel—that they have made a mistake; and speak *with* and not *for* the Dentists of England.

WORKING OF THE COLLEGE OF DENTISTS.

A very interesting paper from one of our contributors, on the "Origin and Development of the College of Dentists," renders it unnecessary for us to trace up the proceedings that led to the formation of that institution. We shall, however, as showing how its founders are redeeming the promises which they made when they issued their prospectus, briefly glance at what the College has been doing since the 14th of February, the day of the first meeting of its members and associates.

At that meeting the President, Mr. Robinson, delivered an inaugural address, which was received with the marked approval of the crowded assembly that thronged the Hanover-Square Rooms, and has elicited the encomiums of the medical press, not only in this country, but on the Continent. On the same occasion there was a very interesting exhibition of anatomical specimens, having reference to dental science, as well as of dental instruments, and minerals and metals used in the manufacture of artificial teeth.

On Thursday, the 19th of February, Dr. Steggall commenced his course of four lectures on "Descriptive Anatomy;" and on every Thursday, from that date up to the close of the first session, there was a lecture on some subject calculated to prepare the minds of the students for the studies which it is the intention of the College to make a *sine qua non* for all who seek its diploma. Besides Dr. Steggall, the lecturers were Jabez Hogg, Esq. M.R.C.S., G. Simpson, Esq. F.R.C.S., Dr. Gladstone, F.R.S., and Alfred Carpenter, Esq. M.B. Lond. M.R.C.S. Now when it is seen that the lectures of these gentlemen embraced such subjects as "The Histological and Comparative Anatomy of Teeth, Diseases of the Dental Tissues, Dental Caries," "Bone Enamel and the Metals," "Principals of General Surgery," &c., it must be admitted, that the College of Dentists has not given "undue pre-eminence" to the mechanical department of the Dental Profession. At the same time, this department has received the attention which it demands, and which no competent dentist will deny it; for at the first monthly meeting of the members, held on the 3rd of March, Mr. Donaldson M'Kenzie read a comprehensive paper, "Upon that portion of Mineralogy which bears directly upon the Production of Mineral Teeth;" and when he had done so, a lengthened discussion took place on the various points of that subject,

At the monthly meeting of April, Mr. Underwood read a very able paper on escharotics; and this gave rise to a discussion that must have been in the highest degree instructive to the students.

On the 5th of May Mr. Adam Thomson read his valuable paper on Dental Caries; and Mr. Perkins his on Pivoting. Both gave rise to much discussion; that on the second being, after it was carried on for a considerable time, adjourned over till the monthly meeting for June.

On the 2nd of June this discussion was renewed, and brought to a conclusion by the talented author of the paper. Mr. Harding then read a paper on the "Electric Cautery;"

and the discussion thereon closed the ordinary business of the first session.

So far for the educational movement inaugurated by the College of Dentists. But have the Council and members confined themselves to that? Their proceedings with reference to the Medical Bills before Parliament answer the question. We believe that no body ever showed more vigour than that displayed by the College of Dentists, when its attention was directed to the clauses in these bills, which would, if carried, put an end to dental surgery as a separate profession, and be fatal to the professional existence of practising dentists.

We need not here go into a detail of the points in the proposed measures that so seriously affected dental interests. This is supplied in a contribution from Mr. Underwood, which we insert in another place. But there can be no doubt, that the profession at large is deeply indebted to the College for what it has achieved for every practising dentist, by obtaining the consent of Lord Elcho and Mr. Headlam to the introduction of clauses to exclude dentists from the operation of the Bills, should either pass into law. In less than forty-eight hours after the Bills were read by the Council, and the alarm was communicated to the members, success had been achieved; and achieved in so satisfactory a manner, that Lord Elcho himself took charge of the Petition for the amendment of his own Bill.

This is a matter that speaks for itself. There is no necessity to dilate upon it.

The College has been attacked in all the moods and tenses. Gross mistatements have been made by anonymous writers against individual members of the Council, in order to damage the working of the whole body. But these gentlemen have had the good sense to take no heed of their nameless assailants. Any other course would have been a mistake; for—

> "Who shames a scribbler? Break one cobweb through—
> He spins the slight self-pleasing thread anew;
> Destroy his fib or sophistry—in vain!
> The creature's at his dirty work again!"

The Council of the College of Dentists may, as an answer to all vapourings against the institution, point to what it has done in its first session. Can its opponents show a similar amount of work? Can they tell us anything practical done by them in furtherance of the education of dental students, or to forward the permanent interests of the profession?

If not, the Dentists of England ought to have no difficulty in, as a body, declaring for the college. Surely, no practical men can have any hesitation in deciding, when the choice lies between realities and chimeras.

DENTISTRY AT THE LONDON HOSPITAL.

Under this head, the following letter has appeared in the LANCET:—

SIR—As you have so often proved yourself a valiant and successful champion in reforming hospital abuses, I beg to call your attention to a recent dicision of the House Committee, concerning the extraction of teeth. This heterogeneous mass of brewers, gin-distillers, bankers, and clergymen, altogether disregarding the claims of the students and the interests of humanity, have transferred this branch of surgical art from the hands of the pupils to an officer of the institution, who will now have to perform the onerous, though somewhat anomalous duties of butler, dispenser, and dental surgeon.

The College of Dentists have lately been making attempts to rescue their profession from the hands of empirics and pretenders, and they will doubtless fully appreciate the encouragement they have received from this hospital.

The students have already memorialized the House Committee on the subject, but their official dexterity, nurtured by years of judicious training, enabled them to return a polite, though evasive reply. The pupils are thus deprived of practical instruction in an art which many of them, as country practitioners, will of necessity be called upon to exercise.

I am, Sir,

Your obedient servant,

London Hospital, April 1857. DENS SAPIENTIÆ.

If anything had been wanted to show the necessity for a union of the Dental Profession, in one general association, the fact stated in this letter supplies it. The "brewers, gin-distillers," &c., would not have ventured to act in this way, if the dentists of London had the *status* of an associated

profession. It is but charitable to suppose that the governors are in a state of deplorable ignorance as to the requirements of the sick admitted into their hospital, if it be a fact that they have, dispensed with the services of a dental surgeon, and invested their larder-man with duties which pertain only to a dental practitioner. In which case we must say, "God help their patients!"

But if the thing be not all a joke, there is one question we should very much like to have answered by *Dens Sapientæ*, and that is, as to whether the dentist so shamefully treated by the learned board of the London Hospital is one of the eighteen who secretly petitioned the College of Surgeons. If he be, he has capital ground for a second petition. We should be curious to know what the magnates of Lincoln's-inn-fields would do for him.

However, of the case itself there can be no second opinion, always excepting that entertained by the *enlightened* individuals who rule at "the London." Our advice to the students would be to protest, again and again, against a union of the kitchen and the medical school. They have paid their hospital fees on the faith of receiving instruction from professional men, and not from gentlemen who officiate in pantries; and they have a right to get what they paid for, or to have their money returned.

DENTAL PATENTS.

The American Dentists, possessing as they do all the advantages of a regular system of education in their Dental Colleges, cannot, nevertheless, resist the temptation of dental patents. No sooner is the merest alteration, or a shadow of an improvement made, than a "patent claim" is immediately registered. There may probably have been some reasonable excuse for those patent rights some twenty years since, but now that the profession has assumed such a high standard in America, we are surprised that its heads do not discountenance the system. Even in this country where the profession is un-

happily divided against itself, a fundamental law in each society meets this disparaging evil—viz. that no member shall be the proprietor of a patent that pertains to dentistry. Surely, if we, on this side of the Atlantic, can afford to exclude members upon this ground, the heads of the American Dental Colleges might well do so by passing a similar law. We extract the following "patent claims," from the "*Dental News Letter*," and on some future occasion we shall refer to this little mercantile topic again.

ARTIFICIAL TEETH.—Alfred A. Blandy, of Baltimore, M.D. I claim constructing Artificial Teeth with a hole, *a*, passing vertically through them, for the reception of the molten metal: and with a neck, *b*, and projecting sides in the manner and for the purposes set forth.

PLATES FOR ARTIFICIAL TEETH.—A. A. Blandy, of Baltimore, M.D. I claim moulding the plates of Artificial Teeth, in such manner as to obtain a perfect fit to the gums, and a correct articulation of the teeth upon casting, as set forth.

PLATES FOR TEETH.—A. A. Blandy, of Baltimore, M.D. Ante-dated December 11, 1856. I claim casting the plates of Artificial Teeth of an alloy, substantially as described, suitable for such a purpose from its chemical and physical properties, and that practically will not shrink or expand in solidifying.—*Scientific American.*

FOR MOUNTING OF ARTIFICIAL TEETH.—George E. Hayes, Buffalo, New York.—My invention consists in a certain mode of applying the platina connexions by which the teeth are attached to the plate and retained in place, whereby I am enabled to represent all parts of the teeth and gums of the natural shape and proportion; and also, to afford to the work when finished, greater power of resisting any strain in the mastication of food, or other ordinary uses of the teeth, than is afforded by any of the modes of applying the connections generally used.

CLAIM.—Providing the teeth severally with a groove in the base, for the purpose of receiving a wire frame, or its equivalent, with a wire or wires projecting from the base on each side of the said groove, for the purpose of serving as connections with the plate and with the wire frame, thereby enabling the natural crown to be represented on both sides of the tooth, and dispensing with the ordinary backing. Also, the attachment of the teeth to a wire frame, when the said frame is employed in addition to a direct connection with the plate, and stayed to the plate by stays, to give additional stability and security to the teeth.—*Journal Franklin Institute.*

THE DENTAL PROFESSION AND THE NEW MEDICAL BILLS.

The anomalies of legislation are among the interesting features of our age, and in no case have they been more forcibly instanced than in the two Medical Bills now before Parliament.

As printed after the first reading, both Lord Elcho's and Mr. Headlam's Bills proposed to enact that none but persons possessing a Medical or Surgical Diploma from some existing College or Corporation, should be registered under the act. By the 22nd clause of Lord Elcho's, and the 15th clause of Mr. Headlam's Bills, it was expressly stated, that the qualification or qualifications must be produced at the time of registration.

Of the large number of dentists practising in the United Kingdom, very few possess such a diploma; and therefore they could not be enrolled on the register. Of their capability in the great majority of cases to practise this particular branch of surgery, there can be no question. The greater proportion of them are educated dental-surgeons; and it would have been an unfortunate circumstance for the public, if this particular branch of practice had been transferred to the surgeon, apothecary, or chemist, who, from want of experience, and that dental-surgical and mechanical knowledge, so essential to success, have as a general rule a great objection to perform any operation on the mouth. To this it might be answered, that the Act could not be retrospective; that the utmost effect it could have had on dentists would be, that all who in future wished to practice this special branch of surgery, must previously have obtained a medical or surgical diploma, those at present in practice being left unmolested to pursue their avocations as before. Not so Clause 42 in Lord Elcho's; and 31 in Mr. Headlam's Bill, proposed to enact that:—"After the passing of this Act, no "Person shall be entitled to recover any charge in any court of Law "for any Medical or Surgical Advice, Attendance, or for the Perform-"ance of any operation, or for any Medicine prescribed, administered, "or supplied by him to his own Patients, unless he shall prove upon "the trial that he is registered under this Act."

In what position would this have placed the dentist at present in practice? Why, he must either have demanded his fee beforehand, which no gentleman would choose to do, and few respectable patients

would submit to, or he must have placed himself entirely at the mercy of those who might consult him (and all of these might not be "honourable men"), as the proposed Bills would have withdrawn from him all the protection and aid of the law, and by so doing, would in a very short time have deprived the public of the services of many of the most eminent members of our profession. The only alternatives left them, would have been to turn their energies and talents into some other channel; or to elect between jeopardizing a large portion of their annual income, or adopting a practice repugnant to every high-minded and honourable man.

Such, as far as our professional brethren were concerned, was the state of affairs on the 4th of June, on which day the bills were on the list to be read a second time.

At the Ordinary Meeting of the College of Dentists, on Tuesday, the 2nd of June, the Presidents and myself introduced the subject to the members, explaining the effect the proposed bills would have on the profession if they passed into law. I proposed "that a General "Meeting of the College be held on Thursday, the 4th of June, to "adopt a Petition to the House of Commons, praying that House to "insert a clause into both Bills, exempting Dentists from the "operation of the Act, and to invite all Dentists throughout the "country, whether members of the Dental College or not, to append "their names to the same." This motion was unanimously adopted; and the following Petition was subsequently agreed to by the Council.

To the Honourable the COMMONS of the UNITED KINGDOM of GREAT BRITAIN and IRELAND, in Parliament assembled.

The HUMBLE PETITION of the undersigned Dentists SHEWETH:—

THAT your petitioners humbly beg to represent to your Honourable House the great injustice they conceive would be done to them, and especially to those who at any future time may enter into practice as dentists, by either of the medical bills now before Parliament, should it pass into a law.

THAT of the existing number of dental practitioners in the United Kingdom, but very few are members of any medical or surgical colleges or corporations.

THAT none but members of such colleges or corporations can be registered under these acts, and none but registered persons can perform surgical operations, or act in a medical capacity, thus deterring the

future dentist from following his professional calling, unless he become a member of one of the said colleges or corporations.

THAT this your petitioners would humbly submit will be a great hardship on those who have entered on their pupilage without supposing such a step should become necessary. Again, no person unless registered under either of the acts, can, after its passing recover in a court of law, any charges for surgical operations or medical advice. This your petitioners would humbly represent will at once affect existing dental practitioners, and deprive them of that protection the law has hitherto afforded them in the legitimate exercise of their calling.

Your petitioners submit that the following clause be added to the bill; "Nothing in this act contained shall extend, or be construed, *to* extend to prejudice, or in any way to affect, the lawful occupation, profession, trade, or business of dentists.

YOUR PETITIONERS therefore humbly pray your Honourable House, that the said bills may not pass into a law as they now stand, but that they may have such relief in the premises as to your Honourable House shall seem meet. And your petitioners will ever pray.

On the evening of Thursday, the 4th, the President stated that both he and his friends, Mr. Hepburn and Mr. Underwood, had, in the mean time, been exerting themselves to the utmost, and that he had much pleasure in stating to the meeting, that both Lord Elcho and Mr. Headlam had promised to insert a clause into their respective bills, specially exempting the dental profession. This announcement was received with much satisfaction.

At the same time, it was considered advisable that the petition should be signed and presented; and accordingly, when it had received the signatures of most of the London, and many of the country practitioners, (several of whom had travelled from a great distance to append their names), I had the honour of an interview with Lord Elcho, the result of which was, that his Lordship most kindly undertook to present our petition to the House.

Had it not been for the College of Dentists, and the zeal and energy displayed by its Council in defence of the interests of the body at large, I cannot but believe that this manifest injustice would have passed unnoticed; and I think I may congratulate the profession that in this, the first instance since its establishment, in which the general interests of our body were involved, the College has so decidedly and so succcessfully proved that its one object, is to protect the interests and advance the position of the dental surgeon.

T. UNDERWOOD.

CORRESPONDENCE.

To the Editor of the Quarterly Journal of Dental Science.

Sir,—I was a good deal surprised to observe in Mr. Clendon's pamphlet on what has been termed, the recent dental movement, the following passage:—"The undue pre-eminence given by all the writers in favour of the Dental College to what they call the mechanical part of dental surgery, cannot fail to be remarked; as if operations in the mouth were really of no moment compared with making sets of teeth." Now, Sir, for myself, I must be allowed positively to deny that I have ever "given undue pre-eminence" to what *we all* (I suppose) know as the "mechanical part" of dental surgery.

My first letter on the subject of dental reform, published in August 1855, contains an opinion that the College of Surgeons might be in a position to appoint a Board of Examiners to judge of the qualifications of candidates for the distinction of "Licentiate in Dentistry." The candidates for such distinction to be required to have gone through a prescribed course of study in a dental college, where all that could be desirable in surgery or mechanics should be taught.

There is certainly not much in such an opinion, to warrant the conclusion that I attached "undue pre-eminence" to mechanical dentistry.

In a pamphlet, published since the establishment of the College of Dentists, I thus express myself:—

"From the great prevalence of disease in the teeth, and the sad consequences of such disease, the speciality of *dental surgery* has assumed an importance second to none. Closely allied to medicine and surgery, it should never be practised except with a knowlege of their general principles, and an accurate and complete acquaintance with the parts to which it has reference. Insomuch, dental surgery resembles other specialities. But the dentist has duties to fulfil in addition to those of alleviating pain, and staying the ravages of disease in the dental organs. Even when all has been done that skill can accomplish to preserve the teeth, they will sometimes be lost. In such cases, who shall say how much the dentist contributes to restore and maintain that greatest of all blessing—health, by *mechanical means.* The science of dental mechanics is, in truth, an interest-

ing one, not alone as a triumph of ingenuity, but for the large amount of comfort it affords to so many thousands of the community."

Here, then, is a profession whose legitimate members must be possessed of a knowledge of anatomy and surgery, and who must further be mechanically ingenious; the peculiarity of the calling, also, demanding kindliness of feeling and gentlemanly deportment."

I scarcely think that any but a prejudiced mind could interpret this passage as expressive of "undue pre-eminence" in favour of mechanical dentistry, notwithstanding that that important branch of the profession is fully recognized.

As regards the question of *examination*, the opinion contained in my letter to the *Lancet* in 1855, has undergone some modification, owing to the ample opportunities I have had of discussing the subject with practitioners of better and more experienced judgment than my own.

I confess I am glad of the opportunity afforded by Mr. Clendon's remarks, to correct the mistaken notion entertained by some practitioners who differ with the supporters of the College of Dentists, that the latter entertain an opinion that dental surgery is of small importance as compared with dental mechanics. I have always insisted upon the necessity of a *comprehensive* system of dental education, for it is impossible to contend that a practitioner can be duly qualified, unless he is equally in his element, in the surgery or at the bench. Some of the opponents of the college have harped and harped upon the repudiation of surgery by its supporters; but, until now, the opportunity of contradicting such an assertion has not offered itself. No gentleman could, consistently with self respect, condescend to notice remarks accompanied with personal attacks of an offensive nature, and having no reference whatever to the question at issue.

I am, Sir,

Your most obedient servant,

Croydon, May 29, 1857. SAMUEL LEE RYMER.

To the Editor of the Quarterly Journal of Dental Science.

SIR—In my paper on Gutta Percha stopping, which you were kind enough to insert in the first number of the Journal, there is an accidental error which I should be glad to have corrected; I intended to state, that the silica I used was prepared, *not* from the silicate of

potash or soda, but from the *gaseous fluoride of silicon*; that obtained from the silicate of potash, although very pure and white, is too compact and gritty, and does not make nearly such a nice article as the light bulky variety prepared from the fluoride of silicon. By inserting this in the forthcoming number of the Quarterly Journal, you will oblige, Your obedient servant,

Bridgewater, April 6th, 1857. HENRY LONG JACOB.

MISCELLANEOUS.

DENTAL MEMORANDA.

By T. PURLAND, Dentist, Phil. Dr. Surgeon-Dentist to the Mesmeric Infirmary.

Continued from page 65.

"SPECTATOR, 1712.

"The most acute and violent Tooth-ach, instantly cured by a liquid Remedy, prepared without Mercury, or other pernicious Ingredients now in common Use for that Distemper.

It likewise effectually preserves the Teeth and Gums from Decay, and absolutely clears 'em from the Scurvy. Sold at 7s the Bottle by Mr. Robotham, at the Red M, in Pope's-Head-Alley in Cornhill; Mr. Jennings, the Corner of Milk-street, Cheapside; Mr. Parsons, at the Hat and Feather next White-Fryars-Gate, in Fleet-street, and by Mr. Perry, Perfumer, near Exeter-Change in the Strand."

"POST-BOY, Dec. 7, 1717.

"I, Richard Cox, at the sign of Westminster Hall, in Dunning's-alley, without Bishopsgate, having a Child 14 months old, so wasted away, and brought so low with Sickness and hard breeding and cutting of its TEETH, that the biggest part of his Arm was very little bigger than one's thumb, and also had a large sore Place in the Pit of his Stomach, which continually wasted him away; We carried him to the College of Physicians, and several other Doctors, but could get no Cure; at last being advised to send for the ANODYNE NECKLACE for Children's TEETH, which Dr. Chamberlen has recommended to the World; up one-pair of stairs at the sign of the NECKLACE without Temple-Bar. We put it about his Neck, and he has wore it some time, by which he is perfectly recover'd, and is a lusty fine Child,

and can now go alone. The Truth of which will be attested by several at my Dwelling-House above mentioned.

Decemb. 7, 1717. RICHARD COX."

"POST-MAN, Jan. 1718.

A Specific Tincture for the Tooth-ach and all Disorders and Defects of the Teeth and Gums whatever, one Drop of which gives instant Ease in the most tormenting Pain, and not only takes it away in a Moment; but absolutely cures the Tooth-ach, so as certainly to prevent its return.

It assuredly preserves the Teeth from growing rotten; and those that are a little decayed from becoming worse; makes the foulest Teeth as white as Ivory at once using; fastens those that are loose, and cures the Scurvey in the Gums, causing them to grow up to the Teeth again to Admiration. It is neither disagreable to the Smell or Taste, but really preserves the Teeth and Gums from all manner of Foulness, Corruption and Putrefaction, and may be depended upon to answer the Character here given of it, literally, and in every respect. To be had at the Two Blue Posts near the Square in Haydon Yard, in the Minories, at 3s 6d Bottle (which contains enough to last several Persons a great while) with directions.

"POST-MAN, Feb. 18, 1718.

"Mr. Pilleau, a French Goldsmith, who Lived at the Sign of the Golden Cup, over against Slaughter's Coffee-House, at the Upper end of St. Martin's-lane, is Removed over the way, at the Corner of Newport Street, at the Pewterer's; And Continueth to make and set Artificial Teeth, and whole Jaws or Rows with the utmost Nicety."

"POST-MAN, April 1718.

The Incomparable Powder for cleansing the Teeth, which has given so great satisfaction to most of the Nobility and Gentry in England, and above 10 Years publickly experienced and highly recommended, notwithstanding the many Counterfeits since its first Publication, endeavouring to imitate this, the only true Original Powder, which is deservedly a famed Secret. Sold only at Mr. Halsey's, Bookseller, in St. Michael's-Church Porch, near the Royal Exchange, Cornhill, and at Mr. Markham's Toy Shop, at the 7 Stars, under St. Dunstan's Church, Fleet-street.

It at once using makes the Teeth white as Ivory, tho' never so

black or yellow, and effectually preserves them from rotting or decaying, continuing them sound to exceeding old Age. It wonderfully cures the scurvy in the Gums, prevents Rheum or Defluxions, kills Worms at the Roots of the Teeth, and thereby hinders the Tooth-Ach. It admirably fastens loose Teeth, being a most cleanly Medicine of a pleasant and grateful scent. Price 1s the Box. At the same Places are sold the highly esteemed Lip Salve for Ladies, &c. of a charming and delightful scent. Price 1s the Box."

"DAILY COURANT, May 30, 1718.

"A highly esteemed Stiptic to fasten loose Teeth, be they Rotten or Sound, in Old or Young, which fixes them in the Alviolus, and in their Sockets, like Nails in a Board; causing also the loose and flaccid Gums to grow fast to the Teeth, whereby both are preserved continually to Admiration. Numbers of People have experienced it, and praised it to the Skies, after a vain Tryal of 40 other Things. In a Word, if it answer not Expectation, or if any Thing on Earth can excell it, your Money shall be returned. Price 1s. the Bottle.

"Sold by Mrs. Maws, Perfumer, in the Narrow West Gate, or Entrance into the West Walk of the Royal Exchange, and at the 7 Stars Toyshop under St. Dunstan's Church, in Fleet-street."

"POST BOY, 1718.

"The Empress of China's Majisterial Dentrifice, or Royal Indian Teeth-Powder, which is a thing so Beautiful, Odoriferous and Fine, that in all the Cities of Europe there is rarely found anything comparable to it. It makes the Teeth White like the driven Snow in a Moment, and the Breath Sweet, like the Scent of the Musk-Rose and Violet: It cleanses the whole Mouth from the Scurvy and all Filth, and preserves the Teeth from all decay Looseness and ill Smell.

"It restores the Gums, giving them and the Lips an admirable Coralline Luster, and by imbuing the Mouth with its lovely, and transporting Flavour, it gives Airs and Charms to the countenance also, as many Noblemen and Ladies have observed to their exceeding great Satisfaction. It is indeed a thing fit for Princes. Sold in fine India Boxes, price 1s 6d each, at John's Coffee House, in Swithin's Alley by the Royal Exchange, and at the Flower-de-Luce, an Herb-Shop, in Covent-Garden Market."

"Post-Boy, Dec. 1719.

"The Widow of the late Dr. Povey, Operator for the Teeth, now follows the same Business: she cleans Teeth, and puts in artificial ones so easy, neat and firm, that they need not be removed for some Years; and they may eat with them as well as with their former, and cannot be distinguished from their natural ones; and sells all his Medicines, which she made up for him many Years in his Life-time, there being no Person that can make them right beside herself, viz., A pleasant Dentrifice, being the same that King Charles II. constantly used; it makes the Teeth as white as Ivory, and preserves them from decaying, destroying the scurvy. She hath a Cephalick which certainly cures the Tooth-ach in a Minutes time, beyond any person in England; and stops hollow Teeth, so that the Pain will never return again. If the Teeth are rotten or uneven and full of Holes or Black Specks, she will make then smooth, even, sound and white. She sells a pleasant Water that prevents any Rottenness from seizing the Teeth, takes all Pains and Imposthumes, Cankers or swellings out of the Gums, and fastens loose Teeth; which several persons of Quality and others know to be true. All the above mentioned Preparations are to be had of her (at the same Place) the Sign of the Queen's Arms and Dial, next door to the Tin Shop, near Exeter Change in the Strand, and at Will's Coffee-House in Cornhill, at reasonable rates.

PROFESSIONAL REMINISCENCES,

Including a few hints to the rising generation of Dentists.

By Nemo.

When I remember the formidable enemies I had to contend with in commencing the battle of life a few years ago—enemies which have to be encountered by all young practitioners not having the good fortune to be born with silver spoons in their mouths—I feel anxious to do something in the way of directing the young professional friends I see growing up around me in their choice of weapons to overcome these enemies. First of all, let me call to mind the shape in which enemies present themselves:—Inexperience, an empty purse, and no friends, are to be found in the first rank of opponents. There are many less strong in the rear, which it will be unnecessary particularly to enumerate, as they are, in fact, brought into existence by those mentioned. I do not mean to say that all young practitioners have

to fight their way against these obstacles, because every rule has its exceptions, but that such is the case generally. For the future, however, the rising generation of dentists will not have the difficulties to contend with that their predecessors had, for up to the present time, or at any rate until very lately, the young dentist, however well qualified, upon commencing practice had nothing to recommend him to the confidence of the community in which he would labour. There was no institution of dental science with which he could connect himself to satisfy the public mind of his competency; consequently. he has had to remain a certain number of years with scarcely any employment, except that of studying the best means to make both ends meet—and a very difficult study this has been found by too many, I say *too* many, because I can assure my young friends that the description of study here alluded to, although necessary and most creditable, is far from pleasant.

In setting up in a town amongst strangers, the young dentist has a better chance of getting into practice than amongst relatives and friends who have seen him grow from a boy into a man, and are therefore unable to realize the fact that he *is* a man. They *wish* him well, but they cannot help doubting his proficiency. Men cannot, however, live on good *wishes*, be they never so sincere.

I commenced 'practice' (?) in the metropolis, where I had many relatives and friends, some of them in considerable affluence; but I did not stay long in London, for I found out by experience the truth of what has just been alluded to. My relatives and friends could by no means understand how it was that a *schoolboy* had become developed into a *dentist*, and I had the mortification of finding out, that at this period when a "case" of any sort, but especially an order for a set of teeth, would have been a godsend to me, an aunt, warm in the pocket, had been persuaded by another relative to have a set made by a stranger to her; and further, some time afterwards, that this same relative who had (with the kindest intentions of course, for *she* would not utter a word against the young man, but he *was* inexperienced) been so considerate in advising my aunt to consult an established practitioner in so important a case, was attacked with tooth-ache, and placing herself under the care of another stranger, had her tooth broken in an attempt at extraction, and afterwards (in the removal of the fang) was relieved of not a little portion of *alveolar process*.

I felt hurt that my relatives acted according to the general rule in

such matters; but, shall I confess it?—the little mishap to my last named relative tended to soothe my feelings in no small degree.

I had been two months, with my name and profession displayed on the door, and I had not seen one patient in that time, save my landlady, for whom I made a gratuitous repair to one of the vilest silver pieces I ever saw. Now the sight of my landlady reminded me, that the aspect of my position and prospects was not such as to justify me in hoping that my practice would pay the rent, so I made up my mind to look out for a more congenial soil wherein to vegetate.

Singularly enough, a day or two only elapsed before I heard, by a mere accident, of a good opening for a dentist in a country town, and it was not long before I found myself there installed in lodgings, respectable, though *very* small. The apartments consisted of a little parlour, which served me for a surgery, a back bed-room, with sloping ceiling, and a garret, which did very well for a work-room. As before hinted, the situation in which I now found myself located, was respectable, but the house small. *Situation* is always before *house;* a large establishment in a bad neighbourhood never has done, does not, and never will, do credit to the occupier by its mere size, so that when a beginner with limited resources commences practice, I think he will find it prudent to follow the plan I adopted with success, and take up his quarters in a *good situation*, but to be content with the *least costly* he can find. Thus he may justly hope to be able to meet his expenses, as every honest man should strive to do, and he will soon be able to judge whether the place he has chosen to commence life in, is likely to support him, and if so, he can then move to a better house, although he should be in no great hurry to do so.

After remaining a year in my lodgings, putting up with sundry inconveniences, which everybody must expect in a like situation, finding myself to be getting on in the world I moved to a small house which I had taken; and in another twelvemonths' time, I felt justified in making another move to a larger house, in which I have lived ever since.

I hope the reader of these reminiscences will excuse me for telling him so much about my humble self, when I assure him, I have good reason to believe, that my case is similar to very many others, and is in fact in accordance with the rule which seems to regulate the struggle for professional existence; it being borne in mind, that the object in recalling a past career, is simply to place beginners on their

guard, warn them of obstacles to progress, and to give them the results of experience in overcoming them.

I must now return to my old lodgings, in which I spent the first fortnight in hoping patients would make their appearance, and in general cogitations on my hard fate, forgetting that, of all the successful, and even talented practitioners, whose positions I was (wrongly) envying, scarcely any one of them had not been in my then state of hopeful expectancy. However, I did live in *hope*, and that is a strong support to a man. My cogitations further led me to understand how that success is not to be attained by doing no more than to *wish* for it, so I set about devising means to secure the desired result.

In stating that relatives and friends are not of much service to a man upon his starting in life, I should have qualified the assertion by adding, that when you are at a *distance* from them, they often *will* endeavour to render aid. This is a curious fact, and not easily accounted for, but it is a fact nevertheless, and one of which there is practical demonstration every day. As I was in a place where nobody was acquainted with me, and as my business was to make every body know me, I was not sorry to learn, that an influential inhabitant had been on terms of intimacy with some members of my family for many years; but as the gentleman alluded to had (as I was informed) a singular notion of his own importance, I thought it better not to ask any favour of him myself, so I wrote off to a relative and mutual friend, who kindly gave me a good word, which had a practical satisfactory effect.

I was not honoured with a call from the influential inhabitant, but he used his influence in my behalf, as I afterwards found out *quietly*, so I freely forgave him his little failing of exclusiveness. We all have our failings, and must make allowance for those of others. In the case of this gentleman, he had, what is termed, risen in the world, a process which seldom takes place without after results which have the character of non-amiability.

When I had been settled a fortnight, I had two patients in one day. The first was an old gentleman, for whom I removed a tooth (I think it was the last in his head). Upon his wishing to know the fee, I scanned my patient. His appearance was not such as to warrant the conclusion that he was a rich man, and I felt (as many practitioners in naming the amount of their FIRST FEE, *do* feel), a little nervous of making it too high, so I determined to be on what I considered, the safe side: "Half-a-crown," I said, "is the fee."—

"Half-a-crown! that's more than ever I paid before." I was much surprised at this, as I thought I had been over modest in my demand, However, I replied, that chemists took out teeth for a shilling—not so dentists, but I would accept the amount he had paid before*.—"Take your charge, sir, take your charge," said my friend, who left me with an air of a much-injured man. Here was rather a discouraging beginning, but all beginners should expect such discouragement, and indeed, this case with the next one only served to afford encouragement to perseverance instead of disheartenment.

My next patient, a lady, had worn a single artificial tooth, which being disabled, she wished replaced by a new one. In the course of preliminary conversation, she informed me that the old piece had been made by Mr. —— of ——, a fashionable West-end dentist. "And pray, Mr. Nemo, what will be the expense?"—Again wishing to be moderate I named twenty-five shillings.—"Oh, Mr. Nemo, that is very high."—As it was evident that twenty-five shillings could be no object to my patient, I determined this time to make no abatement and upon remarking that Mr. ——, the fashionable West-end dentist, would certainly have charged her £2 : 2s. at the very least, she admitted it, but added with a significant look, "the *experience* you know, Mr. Nemo, the *expe-e-e-rience*," laying considerable emphasis on the word experience. I was much nettled at this remark, indeed, I know nothing more annoying to a newly fledged dentist, than any allusion to inexperience. I told Mrs. ——, with some warmth, that if a man understood his profession, it mattered not to his patients whether he were a young man or not. The impression was ultimately taken, the tooth made, and this patient has since proved a valuable friend to me.

About this time I joined the local Literary Institution, and regularly attended the reading-room and lectures; by this proceeding I not only employed my leisure time in a profitable way, but made many friends, and after a time was elected a member of the Committee of Management. I was thus brought in contact with many of the leading families in the neighbourhood.

It should be mentioned that at an early period of my career, I inserted advertisements, announcing that I had commenced practice,

* This was an act of *inexperience*. When once a charge has been named it should *never* be departed from.

in the County Journals. These announcements were of a nature perfectly ligitimate, but were I to commence life over again, I would *carefully avoid advertising*, in the usual acceptation of the term, *at all*. There was no College of Dentists at the period I allude to, and the want of such an Institution rendered it difficult to obtain practice, as there could be no guarantee of proficiency from any recognized public body: *now* a young man with the College qualifications has only to inform the medical practitioners, and *through them*, other influential persons in the neighbourhood, that he is recognized by the College of Dentists, and his competency will at once be acknowledged. As regards myself, I need only add that having once got in the thin edge of the wedge, my position was established, and that by giving strict attention to every case brought under my care, I gradually increased my connection, to an extent which I had scarcely dared to hope for.

In conclusion and by way of summing up, I would offer a few hints which may be found serviceable to those of my brethren about to commence practice: Do not fix upon your field of labour without serious deliberation, and take especial care not to encroach upon the ground of other practitioners. There is in this country, plenty of scope for dental practice, thus rendering close competition equally ungenerous and unnecessary.

Do not trust too much to friends, remembering that the gods help those who help themselves.

If your means are limited, do not be extravagant in making a great appearance at first; it has a far better effect to go from a small house to a larger, than *vice versa*.

Do not advertise; a connexion with the College of Dentists will, ere long, be found sufficient to enable all respectable men to do without it, but by all means make yourself known by joining the public institutions of the place you settle in.

Never speak ill of the work, or character of another practitioner, however well founded such remarks may be; your observations would certainly be attributed to jealousy.

Lastly, *let all your work be done well*. This is the real secret of honourable success. To do this you must take care to be sufficiently remunerated, and you will find that with the exercise of energy, perseverance, and integrity of character, you will attain a position of honour, satisfactory to yourself, and beneficial to the community of which you are a member.

ADDITIONAL EXPERIMENTS ON THE ACTION OF ATROPINE IN DILATING THE PUPIL.

By George Harley, M. D., Teacher of Practical Physiology and Histology in University College, London.

The above paper in the Edinburgh Medical Journal is a very able defence of certain theories propounded by Dr. Harley, and negatived to a certain extent by Mr. Benjamin Bell, the former gentleman asserting that the effect of atropine was a paralization of the third pair, and hence its effect on the pupil, and having experimented thoroughly, he presumes that his theory supports the old established doctrine; the hypothesis of Mr. Bell being, that on dividing the sympathetic nerve in the neck, after it has been joined by the spibal motor filaments, the pupil would become contracted in the usual way, just as if no atropine had been employed. Whereas, should dilation only depend on palsy of the third pair, the contraction would be very moderate, the pupil only assuming the medium size betwixt the two extremes. In acceptance of the challenge, Dr. Harley performed the exact experiments proposed as tests by Mr. Bell, and found from four experiments, results precisely opposite.

In experiment first.—Having dilated the right and left eyes of a cat by a solution of atropine, and having dissected the sympathetic nerve, the membrana nictitans soon spread itself over the eye, and the ear became warm, leaving the pupil fully dilated, and it was not until the ninth day after the operation that it could be said to have reached the permanent contraction, consequent upon the section of the cervical sympathetic. On again applying atropine a day or two after, the pupil did not dilate in the same ratio, as when the sympathetic nerve was intact. Experiment second.—The only difference was in dividing the pneumogastric, also the one nerve being firmly adherent to the other, the pupil did not contract visibly, but the membrana nictitans again became visible. Experiment third.—No marked effect on the pupil membrana again visible. Experiment fourth.—Again the same division of the nerve, the pupil remained fully dilated, the membrana nictitans came into view, and the temperature of the ear increased. Dr. Harley shows by the above experiments, that according to Mr. Bell's reasoning, there is direct proof that atropine does not dilate the pupil by its stimulating the sympathetic nerve; and thus the old doctrine must be admitted of acting on the third pair of nerves.

Dr. Harley further proceeds with his investigation, for the sake of thoroughly knowing the effect on the human subject, and in his researches, he finds that his previous idea is refuted by the fact, that the nerve being cut, the pupil dilated with atropine does not contract to one-half. In return for the strictures passed by Mr. Bell on the experiments performed by Dr. Harley and Professor Sharpey, he proceeds to criticise Mr. Bell's mode of reasoning, and takes the statement, that if the pupil be previously dilated to an extreme degree by atropine, and the sympathetic nerve divided, it (the pupil) would immediately contract, if the action of atropine depended on its stimulating the sympathetic nerve, giving as a converse the fact of the pupil being dilated after dissection of the nerve, proves no stimulus was applied to it, and that its remaining fully dilated, is direct proof that atropine stimulated it in consequence of paralysis of the radiating fibre of the iris, consequent on severing the sympathetic nerve.

Paralysis of the nerve is followed by a contracted state of the pupil, stimulation of the nerve on the other hand by dilation of the pupil. If galvanism be applied where the nerve is divided at the neck, the pupil contracts, as the muscle no longer receives nervous stimulus, the galvanism supplying the place of the normal stimulus, the fibres of the iris contract and dilate the pupil. Supposing that atropine acts like galvanism as above noted by supplying the nervous stimulus there is found a dilation of the pupil by contraction of the muscle. Atropine does not affect in the same ratio the branches of the sympathetic nerve, the membrana nictitans spreads itself over the eye, and the ear becomes warm, thus the drug does only act on the branches supplying the iris; with galvanism a very different effect is produced, for the pupil not only dilates, but the membrana contracts and the heat of the ear diminishes, proving that Mr. Bell's theory is in a doubtful position, supported on the one hand, and contradicted on the other; and from facts adduced that atropine has no effect on the membrana, its refutation appears certain. Dr. Harley alludes to Mr. Bell's theory, viz. "That atropine acts in stimulating the sympathetic nerve, though it causes contraction of the radiating muscles of the iris by some direct stimulating action on the muscular fibrillae." Mr. Bell refers in more than one instance in his paper to the effect of belladonna in exciting the radiating fibres of the iris. From experiments since performed by Dr. Harley, he finds an anomaly in the old established theory, for on division of the nerve he expected to find the dilated pupil contract to one half, as is the case

when atropine is dropped into the eye after section of the cervical sympathetic nerve; the only reason he can give is, that the circular fibres of the iris have lost their tenacity from having been overstretched by the action of the radiating fibres of the iris, which would before the section of the sympathetic nerve be all powerful, and the third pair be paralysed by the action of the atropine. In consequence of this Dr. Harley again experimented, and on dropping atropine into the eye of a cat, and examining it two hours afterwards, the pupils were half dilated, similar in appearance to the result of paralysis of the sympathetic nerve from aneurism of the neck. By long application he finds that the pupil can be fully dilated, though a greater amount of atropine is necessary when the sympathetic nerve is intact. From many experiments Dr. Harley feels satisfied that the section of the sympathetic nerve makes it more difficult for atropine to affect the pupil, though it does not destroy the power entirely, and in consequence of the theory of paralysis of the third pair is upset, for it is also evident that paralysis of the circular fibres could not cause contraction of the pupil.

Thus as both theories are upset, and the action of atropine is not explained, the view held by Ludwig seems to be a feasible reason. Dr. Harley experimented on a cat, having killed it by severing the medulla oblongata, and extracted the two eyes, freed them from the muscles, nerves, &c. of the sclorotic, he placed the cornea of each in watch glasses, the one containing pure water, and the other a solution of atropine. The pupils before immersion were about one-third dilated; after being in the solution three days, the eye in the atropine was dilated to a great extent, while that in the water closed to a mere slit; the radiating fibres of the iris in the atropine was very much contracted, and drawn round the eye in circular folds. He tried the same experiments on the eyes of a dog, but with no success, which makes him inclined to adopt the theory of Ludwig, that the action of atropine depends on its directly stimulating the radiating muscle of the iris to contraction, as it is known the contractability of the muscular fibrillæ is independent of nervous influence, and that muscles can be made to contract by direct stimulus, even when stimulus, applied to their attacked nerves, fails to awaken their contractile power; and though he leaves this theory undecided, still he hopes, ere long, to arrive at a truthful solution of this anomaly, that the atropine acts on the iris through the nerves.

CONGELATION AS AN ANÆSTITHETIC.

Dr. James Arnott observes, in reference to the subject of anæsthesia in surgical operations, how insensibility can be produced without endangering the life of a patient, and in answer to the objections started by many as to its effect as a substitute for chloroform, the above paper is written to remove doubts by supplying the requisite information, and in pursuance thereof he puts the following few questions: First—Is congelation certain in its effects? can it always be depended upon? In answer, he says, any mistakes that have occurred were caused by its misapplication, and he alludes to a multitude of cases published by M. Valpeau, and others, on the subject where congelation has mitigated much acute suffering, especially where the skin and subcutaneous tissues alone are incised, when complete anæsthesia can be depended upon with perfect certainty: though when inflammation exists this agent must be applied longer than usual.

M. Costa, director of the Medical school at Marseilles, clearly proves this in his notice on the subject in the *Union Médicale*, for September 1855. Dr. Arnott likewise quotes a few cases from the *United States' Journal*, all bearing on the success of congelation, one in which a tumour over the knee joint was removed with no suffering whatever to the patient: another, the excision of a lipoma from the back of a negress, the time being only a few minutes; the only suffering experienced was on the application of the ligatures and straps, and in all the above cases the cure was completed by first intention, besides the greatest benefit from the stoppage of hemorrhage by the application of the freezing mixture.

Dr. Kitto.—From the memoirs of the late John Kitto, D.D., F.S.A., &c., recently published, we learn that that eminent writer was once a poor workhouse boy, in Plymouth, hopelessly deaf, the result of a fearful accident whilst helping his father, a mason, in his labour. Having been apprenticed by the parochial authorities to a shoemaker, he learned his master's trade; but meeting with friends, who discerned a latent intelligence in the youth, he was through their influence received into the house of a benevolent dentist, of reputation in Exeter (Mr. Groves), where he was thoroughly initiated into the mysteries of the profession. A strong predilection for literary pursuits led his kind master and benefactor to place him in the way which subsequently led to the great results the world has witnessed in Dr. Kitto's works.

A SUBSTITUTE FOR SILKWORMS.

Happily, there would seem now to be little need of the *eria*, or Chinese silkworm, or of the cocoon of commerce, for the production of silk will ere long, in all probability, be derived, not from the worm, but the leaf on which it has hitherto existed. It is now not the breeding of the insect, but of the mulberry tree—that species which was its only food, and which from that circumstance gave the *savant* the cue that led to his making the intimated discovery. His name has not yet been announced, although we should imagine it was none other than Signor Lotteri, who, in the course of last year, fully ascertained that a silky substance could be procured from the bark of the mulberry tree, and that by maceration, good silk, and paper also, could be easily prepared therefrom. The *savant* in question, ruminating, it is said, on the circumstance of the silkworm living on one description of food, came to the conclusion that "the silky substance must lie not in the animal, but in the vegetable matter" which supported it. He therefore "analyzed the composition of the mulberry-leaf, and, by boiling it to a thick paste, produced every description of silk in immense quantities." Such a substance being obtained from that species of leaf, it is not at all unlikely that from the Chinese oak and the castor-oil plant a somewhat similar result might be obtained. Be that as it may, and the truth of the other being shortly corroborated, neither Moreton-bay need sigh for the introduction of the cotton-plant, nor the northern and southern States of America shed their blood for the suppression or in the defence of slavery, nor England much longer play the hypocrite by condemning that accursed "institution" with one breath, and with another admitting the expediency of, at all hazards, strenuously upholding it. This is the land—every land within the temperate zone, is more or less—favourable to the rearing of the vine, the mulberry, and the olive. Every one, therefore, the possessor or occupier of a small spot of ground therein, may rear the great substitute for cotton, and, in so doing, weaken more and more this lamentable and apparently indispensable adhesion to slavery. He may "put money in his purse;" and, clothing his family and himself in "silk attire"—such as Imperial Cæsar had not dared to wear—drawn from the branches that give him shade and refreshing sustenance by day, and by night afford him the sleep of contentment, he may well thank Heaven that he is permitted to reap the fruits, though he has shared not the labours, of the thoughtful and perhaps ill-recompensed analyzer of the enigmatical phases of nature. He may cheerfully and confidingly believe thenceforth that in the varied productions that she surrounds him with lie hid the main causes of the world's progress, and the renewing sources of peace and goodwill to men.—*Sydney Empire*

REVIEWS.

Letters and Papers on the Recent Dental Movement, Revised and Reprinted from the Medical Journals; with Remarks on the Present Anomalous State of the Dental Profession. By J. C. CLENDON. Webster & Co., Piccadilly.

Mr. Clendon states, that his object in bringing together those letters and papers, is to answer more completely than he could otherwise do, the questions that are constantly put to him with reference to the present unsatisfactory state of the dental profession; consequently, the various correspondence that has taken place in reference to the Dental College and the Odontological Society are brought together. And as a matter of course, Mr. Clendon denounces both those bodies, and constitutes himself supreme judge, or the dental practioner's monitor, in this matter. We decidedly object to Mr. Clendon's idea, that it is necessary for a man to pass the College of Surgeons before he can really be a scientific dentist; before we can fall in with such opinions, we must first ascertain the number (if any) of extraordinary operations, such as the removal of tumours from the antrum maxillas, &c., performed by the present members of the College, who are practising as dental surgeons. Although Mr. Clendon is not over pleased by the comparisons which have been occasionally made in reference to the American *surgeon*-dentist, we must remind him, that our transatlantic brethren, who are members of a Medical College, do really perform what they profess, and operate upon such cases as we have referred to. They do not *shift* the responsibility to the shoulders of a Furgusson or an Erichsen. According to Mr. Clendon's mode of reasoning, he would wish the public at large to believe, that a person possessing the diploma

of the College of Surgeons, was entitled to say of himself—*I* am the surgeon—*I* am the dentist—and *I am* the scholar.

One word as to the concluding paragraph of Mr. Clendon's pamphlet, in which, referring to the preliminary lectures just concluded at the College of Dentists, he asserts, that that body did not possess, amongst themselves, "a single individual accustomed to teach dental surgery;" and that of the lecturers "not one has any special qualification in the dental department, but only the regular education of medical men." The assumed conclusion is incorrect. The Council did not intend, in their preliminary course, to include dental surgery; this is reserved for the approaching session. As to the capabilities of those gentlemen who have lectured, it should be borne in mind by the author, and others who think with him, that to the talents and abilities of *one* of these lecturers, very many members of the College of Surgeons are materially indebted for the possession of their diplomas. This gentleman may therefore be considered quite competent to instruct, in his especial department, the candidates for the diploma of the College of Dentists.

On the Performance of Operations on the Teeth without pain, and on some Recent Methods of Preserving and Restoring Teeth. By SAMUEL A. PARKER. London: J. Cornish, Holborn.

In this pamphlet Mr. Parker gives a sketch of the various modes adopted during the last ten years to relieve pain in dental operations; and dwells more particularly upon the introduction of local anæsthesia by congelation, of which he is a warm advocate.

Mr. Parker adds the experience of various authorities on the subject to his own, and without expressing an opinion on the value of the agent itself, we have no hesitation in recommending to our readers this production of a much-esteemed member of the profession.

QUARTERLY JOURNAL OF DENTAL SCIENCE.

OPINIONS OF THE PRESS.

From the Observer.

"This is the first number of a quarterly journal on the subject of dental science, and it reflects much credit upon the editor and upon the writers. It has, moreover, the merit of being brought forward at the fitting time, when the members of the dental profession require the assistance of an "independent journal," devoted to the interests of that occupation as well as to the elevation of this branch of the medical art. In the lucid address to the profession which opens the journal, it is stated to be the intention of the editor and his colleagues to avoid all personalities, a feature which now characterises some of the class periodicals belonging to medical literature and chemistry. The objects had in view, are to make its pages a record of all scientific matters, and of all facts of professional interest, whether native or foreign. The managers of this useful periodical propose to conduct it upon impartial, liberal, and independent principles. The present number contains many valuable practical papers, illustrated with excellent engravings. It also includes the whole of the proceedings of the College of Dentists, reports of lectures, and abstracts of scientific papers read and discussed at the various meetings of the society, extracts from foreign journals, reviews, &c. As a class organ, the *Journal of Dental Science* cannot, therefore, be surpassed among professional periodicals."

From the Morning Post.

"The appearance of this journal cannot fail to be welcomed by the public as a hopeful sign with regard to the character and skill of a profession which has considerably suffered in reputation by the charlatanism and quackery of some of its followers. It is very creditably got up, and seems destined to do much towards the advancement of the important and delicate art or science of dentistry. The conductors tell us that their object is to unite and elevate the profession, 'by doing battle for the general rights; conveying instruction to the student; and keeping all practitioners and pupils throughout the

kingdom informed of the current proceedings of the College of Dentists, as well as of every other matter pertaining to either the social or scientific interests of their profession.' Of the necessity for some publication of this description we find abundant proof in the opening address, which, we presume, is penned after mature reflection by men practically acquainted with the existing state of things.

"The editors point out impartiality and independence as the leading characteristics of the journal, and intimate that it will be the organ of no coterie or clique, nor be made the vehicle of personality or abuse. These promises look well; and, if they are kept, this new quarterly will not only be increased in utility, but will, we are certain, be more generally acceptable to the body of English dentists. The present number contains two or three well-written editorial articles, and several excellent papers by practitioners of eminence, upon different branches of dental surgery and mechanics. There is also an ample report of the proceedings of the College of Dentists; besides accounts of hospital cases, and a variety of miscellaneous information."

FROM THE MORNING HERALD.

"The world at large is, in all probability, but very imperfectly aware that a new and formally-organised profession has, within the last few months, sprung up in England. Our too-familiar acquaintances—those centres of so many hopes and so many fears to one great division of suffering humanity—the surgeon-dentists of this country, have just established a college of their own, which is to serve all the purposes of a special guardian and representative of their interests. We believe the movement which has led to this result originated in a conviction which strongly prevailed among the great majority of their body, that the time had come when they ought to cease to form a mere undistinguished and hardly-recognised adjunct of the Royal College of Surgeons. Their increased numbers, and the growing estimate in which their services were held by the public, seemed to deserve a more honourable fate; and there was this still stronger objection to the continuance of their past connection with the great establishment in Lincoln's-inn-fields, that there the mechanical skill which forms the most important element in the practice of the modern dentist, remained utterly unnoticed and ignored. Under these circumstances, the "College of Dentists of England" has been founded; and here we have before us the the first number of a Quarterly

Journal, which is to be devoted to the general advocacy of the objects for which that institution has been established, and which seeks to become the scientific organ of the profession. This publication contains a number of short and apparently carefully written and instructive articles; but on their special scientific merits we have not the slightest means of pronouncing any opinion. We may observe, however, that we have found in these pages a somewhat interesting account of the inaugural meeting of the members of the new society, with an address from the president, Mr. Robinson, containing a rapid and clear narrative of the progress of dental surgery, from the earliest ages down to the present day. But we must confess, that of all the statements in this journal, the one in which we felt most interested is one in the course of which Mr. Donaldson Mackenzie—a high authority, we believe, on the subject of which he was treating—expresses a hope that 'with the present growing knowledge of the nature and cause of *caries* of the teeth, some specific may be found for its complete removal; so that in time, diseased teeth may, to a certain extent, become like some other diseases, a mere matter of history.' What a happy termination we should thus have of the new college and of all the labours of its members. 'Nothing in their life would become them like the leaving it.' We fear, however, that this 'good time' may yet be a long while coming; and until it shall have arrived, it is manifestly our interest that an association founded for the purpose of elevating the profession, and of affording the public a means of distinguishing between the quack and the scientific practitioner, should grow strong and should flourish."

From the Civil Service Gazette.

"Our readers will remember, that a couple of months ago we adverted to a movement then in progress for the establishment of a College of Dentists, the objects of which should be to endeavour to raise the standard of qualification for those who would intend to adopt dentistry as a profession, to teach a special course of study, and to grant a diploma to those found competent to practise. This College was accordingly established, and an able inaugural address was delivered by Dr. Robinson, who had been requested to act as President. At the same time it was resolved to establish a Quarterly Journal, to develop the views of the profession. The publication before us is the

commencement of the literary labours of the College, and very creditable it is to all concerned.

"In the editorial articles (of which there are three), we find very clearly and lucidly set forth, the reasons why the dentists should unite, and, excluding all quacks, take up a definite position as a scientific and artistic body. We commend these able and forcible papers to those who wish to examine with care the position of dental science at present, and the claims which those who cultivate it possess to rank as members of a distinct College.

"Next follow several papers (many of them illustrated by engravings), on various branches of dental surgery and mechanics, by the President, as well as by Mr. Donaldson Mackenzie, Dr. Purland, and other gentlemen of known ability. These papers are of course of too professional a character for us to extract from. We welcome this well-edited periodical, feeling convinced, that if future numbers equal that before us, the 'Quarterly Journal of Dental Science' will not only effect the object peculiarly aimed at, but will largely assist in general scientific progress."

From the Birmingham Journal.

"This is a new organ of the dentists of England, and is another development of that movement towards organisation and a recognised position, which has so recently resulted in an association which comprises the leading dentists of the country. Until now this important body has had no recognised organ of communication; while in America there are one if not two journals specially devoted to discussion and record of the progress of dental science. The body in England has been dependant upon the general medical papers. Now, however, they seem about to take that position which their numbers, education, and influence justify, and this "Journal" is the outward indication of their independent existence. The first part contains a goodly list of contributions on all subjects interesting to the profession. How they are treated it does not become a layman to say. We can simply bring the existence of the 'Journal' before our readers, and commend the spirit with which the project has been undertaken."

NOTICES TO CORRESPONDENTS.

Letters will not be inserted in this Journal unless authenticated by the name and address of the writer, not necessarily for publication, but as a guarantee of good faith.

It is requested that contributors will write legibly, and on one side of the paper only.

R. W.—The anonymous correspondent, signed "Ajax," is a person named *Spence Bate*, formerly of Swansea, but now of Plymouth.

A Dentist's Assistant.—We are informed that the Council of the College will make arrangements for a complete course of lectures upon each subject; and that portion of anatomy pertaining to dental education will either be demonstrated at the college, or arrangements for demonstrations will be made with some medical school.

L., London Hospital.—We have attended to your suggestions.

Mr. W. Watson.—Its optional with any original member to sign the declaration; new members, will, we believe, have to sign it before their admission.

F. M. S.—Your communication contains too many personalities for insertion in our Journal.

Mr. Woodfall.—Write to Mr. Samuel Lee Rymer. He is the Secretary to the Council.

A Medical Student.—Apply to any of the dental instrument makers.

The Dublin Hospital Gazette.—We have only received one number of this Journal in exchange.

An Irish Practitioner.—Circulars were addressed to every member of the Profession, whose address could be ascertained. The Petition was signed by most of the eminent Dental Practitioners in London, and the Provinces.

St. George's Hospital.—We have much pleasure in announcing that Mr. Charles Vasey has been elected Dentist to this Institution.

Communications and Letters have been received from Mr. Rymer; Mr. Donaldson Mackenzie; Dr. Roberts (Edinburgh); Mr. Bate (Brighton); Mr. A. Hill; Mr. Purland; Mr. Thomson (Denmark-hill); Mr. Pollock; Mr. Robinson; Mr. Simpson (Maidstone). Mr. Hy. Long Jacobs, M.R.C.S. (Bridgewater); Mr. Barrow (Stockport); and Mr. James J. Keene's, (Boulogne-sur-Mer). Their Favours shall appear in our next.

All Communications intended for insertion in the next number of this Journal, as well as Books for Review, should be addressed to "the Editor," at the Publishers, Walton & Maberly, Upper Gower Street, New Road, on or before the 1st September.

OBITUARY.

Dr. S. P. Hullihen, died on Friday, 27th March, at his residence, in the City of Wheeling, of Pneumonia, after a painful illness of some eight or ten days. Few men in the walks of professional life, have more fully illustrated the rare combination of high moral and social virtues, with eminent professional acquirements, and most laborious devotion to science.

In no community has the death of a professional man produced a profounder grief, every citizen felt that a calamity had fallen upon him, and upon his city. The poor and suffering especially felt that more than a friend had gone from them; his noble heart always beat responsive to the claims of humanity among all states and conditions of society. His sympathies were ever excited by the poverty and sufferings of his fellow-man, and his hand extended to relieve the one, and his skill exerted for the mitigation of the other. As a practical surgeon Dr. H. had few superiors, and many of his operations exhibited the genius and skill of a professional mind of the highest order; in the various branches of dental science he was justly distinguished. No higher evidence could be afforded of the professional and social estimation in which D. H. was held by his fellow citizens, than the spontaneous expression of their feelings upon the announcement of his death. The medical faculty of Ohio county, the Council of the city, the trustees of the Wheeling Hospital, of which he was one of the founders, and a large meeting of the citizens, assembled at the court-house, severally expressed, in appropriate resolutions, a deep sense of the personal and professional worth of the deceased, and their profound grief under the bereavement they had sustained in his death. At the meeting of the citizens it was determined to erect a magnificent monument to his memory.

On the day of the funeral until the afternoon hour appointed for the removal of the body to its last resting place, it lay in state in one of his parlours, and was visited by hundreds anxious to take a farewell look at a benefactor and friend; and as the funeral *cortége* passed on through the streets to Wood's Cemetery, it seemed that the whole city had fallen into line in the procession, which extended for more than a mile.

Thus, do "we all fade as a leaf," illustrating every day "what shadows we are, and what shadows we pursue."—"No man can give a ransom for his brother, or redeem his soul from death."

Dr. H. has been intimately associated with the efforts made to advance Dental Science; he was ever a warm friend of the Baltimore College of Dental Surgery, and an active member of the American Society of Surgeon Dentists. We hope, in a future number, to be able to furnish an extended memoir of this distinguished gentleman. His death comes upon us suddenly, and while we were making up the last pages of the journal. "Requiescat in pace."—*American Journal of Dental Science.*

THE

QUARTERLY JOURNAL

OF

DENTAL SCIENCE.

THE

QUARTERLY JOURNAL OF DENTAL SCIENCE.

COLLEGE OF DENTISTS.

SPECIAL MEETING, JULY 30.

A Special Meeting of the Members of the College was held on Thursday, July 30th, 1857.

ELECTION OF MEMBERS.

The following gentlemen were balloted for and duly elected Members of the College :—

P. J. Boulger, Esq. - - - - -	Norwich
D. G. Clerk, Esq. - - - - -	Calcutta, India
W. S. Clerk, Esq. - - - - -	Calcutta, India
— Feltham, Esq. - - - - -	Jersey
— Grey, Esq. - - - - - -	Sheffield
G. F. Hare, Esq. - - - - -	Limerick
G. F. Harrington, Esq. - - - - -	Isle of Wight
E. King, Esq. - - - - - -	Brecon
F. Lloyd, Esq. - - - - - -	Agra, India
J. E. Rose, Esq. - - - - -	Liverpool
J. F. Rose, Esq. - - - - - -	Preston
W. D. Woodburn, Esq. - - - -	Glasgow
W. S. Woodburn, Esq. - - - - -	Glasgow

Several other Candidates were proposed and seconded.

During the evening, Dr. R. Reid, one of the Vice-Presidents, read two papers—one upon the "*Alveolar Hemorrhage Compress*," and the other, "*Observations on the Dentition of the Lilliputian Aztecs.*" Our space will not permit your giving the papers in the present number. They shall however receive due attention in our next.

We must also mention, that Dr. Reid very generously presented

to the Museum of the College a Model with the compress attached: and also various Casts illustrating the Dentition of the Aztecs.

Those papers were received with much applause. The President thanked Dr. Reid for, not only his excellent papers, but also the unexpected pleasure they had in having him present on this special occasion. The company then proceeded to the Museum, where they partook of tea and coffee, &c.

REMARKS ON PIVOTING TEETH, ETC.

The following is the paper read on this subject by Mr. Perkins, at the Monthly Meeting held on the 5th May:—

The operation of pivoting teeth, although pretty well known and practised, does not appear to me to have received all the consideration which its importance and consequences seem to entitle it to.

As I intend to devote a little time to the subject, it may be as well to describe the operation first.

To begin at the beginning, I think, is always the best way; for, however well a subject may be known, or be supposed to be known, there generally happens to be some persons who do not quite understand *all about* it; and when a thing is considered ordinary or common, many do not like to make any inquiry on the subject for fear of being considered ignorant, and by that means, remain in the dark rather than ask for information. I have, myself, not unfrequently, been much disappointed in referring to very well written works for information on some so-called common subject, by finding it asserted by the author that the subject "is so well known" that there is no need of describing it. Now, as a description of this common and well-known thing was what I sought and failed to find, and feeling that I, in all probability, was not the only person who needed information in the like case, I could not help wishing, that the author had taken more pains to fully describe all subjects he touched upon; as in that case, the ignorant would have been instructed, though the wise would not have been compelled to read; or, if they *had read*, might have found something satisfactory to them, either by confirming their previous view, or by setting them to think upon the different, and to them, new view taken by the author. It is, in short, far better to say nothing at all on a subject, than so little, as to leave it unintelligible.

The operation of pivoting becomes necessary when the crown of

a front tooth is so far decayed as to be useless, or decidedly unsightly. The first thing to be done, is to cut off the remaining part of the crown, which (if not of too substantial a character), may be accomplished by the cutting or excising forceps; but when the part to be removed is considerable and solid, a saw, or thin half-round file must be used in such a manner as to avoid touching the centre of the tooth, cutting first one side, and then the other, so as to leave little more than the centre untouched, by which means, a very great deal of unnecessary pain will be avoided. The crown may then be detached by means of the excising forceps, and a small soft broach, prepared for the purpose, should be ready, and quickly and steadily passed up the opening in the tooth, when, with a few turns of the instrument, the vessels will be separated, and sensibility in the part cease. After having filed the stump level with the gum, arching or hollowing it so as in a measure to follow the line of the enamel of the removed crown, the cavity may be broached to the proper size for receiving the pivot, the impression taken, and the case completed.

I would here observe that, in my opinion, it is never advisable to cut off a tooth and pivot a new one to the stump at one sitting, as in case of inflammation taking place, which is not at all unfrequent, even in favourable cases, the tightness of the pivot, not only adds to the inflammation, and prevents the discharge of pus (should any be secreted) but causes a very great deal of pain, and bids fair to render all your previous work useless, by establishing an abscess, and so necessitating the removal of the stump; whereas, had the fixing of the new tooth been deferred for a day or two, or until the swelling and sensitiveness had subsided, the new tooth might have been fixed with the most perfect satisfaction to both parties concerned.

I am induced to make these observations, from knowing that there exists some difference of opinion on this subject among dentists; some holding the opinion which I have here expressed, while others certainly *act* upon a different theory, whatever their opinion as to the propriety of such a course may be. I may just mention here, that it sometimes happens, that after the crown of a tooth is removed the nerve remains still unexposed, owing to the crown not having been cut off sufficiently high up, or to an unusual amount of solidity of structure in the tooth, whereby the internal canal is reduced, both in length and diameter; at the same time, the centre is so exquisitely sensitive, that it becomes a matter of difficulty, if not of impossibility, to proceed, on account of the pain caused to the patient by the filing

that is necessary to complete an opening for the instrument to be used in the destruction of the nerve: the difficulty, however, which here presents itself, may be readily overcome by the careful application of a small quantity of nitric acid.

The method I make use of is as follows:—I carefully dry the surface of the stump with cotton wool, or lint, and then as carefully apply a camel's hair pencil, dipped in nitric acid, to the spot indicating the entrance to the canal. A little instantaneous pain is all that is usually felt, and in less than a minute I am enabled to proceed with the filing until an opening sufficient for my purpose is effected; and should the stump become sensitive again, before the object has been attained, a second or third application may be made, without any inconvenience to the patient, or chance of injury to the neighbouring teeth, provided the part is carefully dried previous to applying the acid: the drying being absolutely necessary, as in the first place, it prevents the acid going over a greater surface than it is intended to affect, and secondly, by its being undiluted, the effect which you wish to produce is done more speedily and effectually.

I have before stated it to be my opinion, that in describing anything that is worth describing, it is better to omit nothing that can be useful or necessary, under the impression that it is too well known to need a description, and in accordance with that opinion, I will venture a few remarks upon the method of taking an impression for a pivot tooth; as I believe all operators will agree with me, that the best work made to an incorrect model, is time, ingenuity, and labour thrown away, producing nought but vexation and disappointment, both to patient and operator. Now, the method that I have seen most frequently used, and indeed the one that I myself have many times used is this: after having bored the stump, a small piece of boxwood, of rather less than a quarter of an inch in diameter, and from three-quarters to an inch long, is shouldered down at about a quarter of an inch from one end, and reduced to the size of the hole bored in the stump; it is then placed in a small quantity of softened wax, with the pin projecting through the upper surface; the pin is then entered into the pivot hole, and the wax pressed carefully up, so as to get the necessary impression; and if drawn away without shifting or altering the position of the peg or pin, this method answers very well; but it is in drawing away the impression from the mouth *without altering the position of the pin*, that all the difficulty lies. I have often succeeded very well with the above method; but I have

also had a great deal of extra trouble at times, owing to the unperceived alteration of the pin, in withdrawing the impression from the mouth. I therefore, with a view to save myself trouble, and to render the operation more certain, have contrived a method which is certainly a great improvement over that one I have described, and if not quite perfect, is, I think, as perfect as is necessary for the purpose, in the hands of any moderately skilful and careful operator.

I will endeavour to describe it.

I have a short tube, say a quarter of an inch long, its external diameter about the eighth of an inch, its internal diameter the size of wire used for pivoting; the outer part is screwed, and to one end is soldered a small round or oval plate, the screwed part is furnished with a nut. I have then a small tray, say large enough to cover six teeth, its depth not more than a quarter of an inch; at the distance of a quarter of an inch from the inside of the external circle, I have three or four holes pierced, into either of which I can fasten my small tube by means of the nut. I have a pin of silver wire fitting accurately, but not too tightly, into the tube, and also fitting easily into the hole in the stump to be pivoted.

The method of application is simple. The tube being made fast into the hole in the tray which will best answer your purpose, you fill your tray with wax in the usual way, and pass your pin through the tube from the underside, sufficiently beyond the wax on the upper side, to enter the hole intended for the pivot; you then apply it to the mouth. Entering the pin clearly into the hole in the stump, and pressing up the wax carefully, in a plane perpendicular to the direction of the pin, you get a very accurate impression; the pin may be thoroughly pushed home at the same time. The impression thus taken may now be withdrawn with scarcely a possibility of deviation, even with a careless modeller, the tube effectually preventing any deviation taking place in the position of the pin, while the tray insures the accuracy of the impression in other respects.

As it occasionally happens, that previous to fitting in a new pivot tooth, the old pivot remaining fast in the stump has to be removed, and as, if it should happen to have been broken off close to the gum, it is not always so simple an affair as at first sight it would appear to be, it would not I think be out of place here, if I were to describe the method of getting over this trouble, in what I conceive to be the shortest way possible.

There are I believe a great many ways of surmounting this diffi

culty, all more or less ingenious, according to the amount of difficulty, to be overcome, or the power of invention developed in the artist by the necessity in which he is placed. I will not, however, trespass on your time to describe the methods which are generally known, but the one which I have found and believe to be the best and ready method.

First, you need a hollow drill, a small trephine in fact, the hollow rather less in diameter than the pivot to be extracted. This instrument is, or was sold, years ago, by Messrs. Ash, and I dare say at other Dental Depôts. But another instrument is wanted to finish the work, which the trephine has begun; and this instrument I have never seen anywhere except at my own house, and I believe is not generally known, and that is why I venture to describe it.

It is also a hollow cylinder; its outer diameter the same, or rather less than that of the trephine drill; the hollow in its centre is tapped, so that it forms a screw cutter, following readily on to the pivot, which the trephine has exposed; it must be hardened and tempered. You have then only to use it carefully with a little moisture, as if you were screwing an ordinary piece of wire, until you have got two or three turns of the screw on to the fast pivot, and you are enabled to extract it beautifully, with the greatest ease.

I have hitherto spoken of pivoting only in its simple and favourable form, or under favourable circumstances; but circumstances occur under which, however *desirable* the operation may be, success is almost impossible; sometimes arising from constitutional or physical causes, sometimes from inattention to the thorough destruction of the nerve, or separation of the vessels in the pulp cavity, and sometimes from the form of the root itself.

The case which I deem most favourable for the operation, may be described as follows; first, nerve unexposed, alive and healthy; and secondly, the fang straight with plane or horizontal section of a rounded equilateral triangular form, the pulp cavity being about central or equidistant from every point in the circumference: the chief thing to be observed is to send the broach, or instrument, thoroughly home so as to entirely separate the vessels inside the tooth from those connected with the periosteum, &c. If this be not completely done so as to extirpate the vessels from the inner cavity, although you may be able to complete your operation, you will find in most cases that the lacerated vessels will suppurate, and communicate their disease to the periosteum, and you will either have an abscess in the alveolus, that will cause the part to swell with great pain, or it will discharge

itself between the socket and the root into the mouth: the latter is the least painful effect of the two, but in either case nothing but the extraction of the root will effect a cure.

The second case I shall allude to, is where the nerve is exposed and aching, the root well-shaped and otherwise favourable. In this case there is little more to be observed than in the first case, viz. the thorough extirpation of the nerve from the pulp cavity, and rest for a day or two, that the irritation caused by preparing the stump may subside, previous to fixing the artificial tooth.

The third case that occurs to me is when the crown is gone, with more or less decay of the stump and softening of the bone, with no pain and with no *perceptible* discharge; generally this kind of stump can be drilled without causing any inconvenience whatever; but this symptom, though flattering to the patient, is by no means a guarantee of success, for very frequently inflammation takes place with swelling and a good deal of uncomfortableness, if not actual pain. This will however, often subside by itself. I have, nevertheless, occasionally found a leech applied to the part of great service in reducing the inflammation, while the application of a little tincture of opium by means of a camel's hair pencil to the part afterwards, is exceedingly useful and beneficial in subduing the pain, and helping to bring about a cure; but it sometimes happens that pus is deposited and the extraction of the stump becomes necessary; or, avoiding the extraction, you are compelled to make use of a plate instead of the neater way of pivoting.

The next case is where all the characteristics of the preceding case appear, and in addition a decided discharge of pus. If anything is to be done here, it is extraction; pivoting is out of the question.

I now come to a class of teeth that is occasionally met with, possessing all the characteristics of the first case named; differing only in the peculiar formation of the fang, the horizontal section of which I would describe as a compressed irregular oval. This form is met with, more frequently I think in the superior central incisors, than any other teeth. The great difficulty in dealing with this kind of formation, is the width and thinness of the pulp cavity, which resembles as much as possible the tube in a thermometer, without its regularity of form, rendering it exceedingly difficult, if not impossible, to pass any instrument, however thin, sufficiently far up the cavity, to separate the internal from the external vessels of the tooth, and which as I have stated before, I believe to be absolutely necessary for a perfect

operation. I recollect some years ago, cutting off two superior central incisors for a lady, giving her comparatively little pain during the operation. The nerve in each was destroyed, and she went away perfectly comfortable; but owing to the thinness of the canal, I couldn ot pass the broach, although a thin one, sufficiently far up to satisfy me; however, she only felt the smart shock from each as is usual in such cases, and all seemed to be over. But in the course of two days after, she returned to me saying that she had been suffering dreadfully; I advised leeching, which was complied with, but to little or no purpose, as they both suppurated, the pulp coming down to the orifice in the stumps, while pus was discharging from the alveoli of both, and I was obliged to extract them. They were of the kind to which I have here alluded; in addition to which, they were crooked or wavelike, adding as a matter of course to the difficulty of the flat cavity. I felt convinced at the time that this peculiarity of formation was the cause of all the trouble. In this case, however, extraction was unavoidable, and the only disagreeable consequences resulting from it, were the pain for the time it lasted, and having to wait a few weeks instead of a few days for her teeth. I have since had some cases similar to the one I have here related, and with few exceptions have felt justified in attributing the failure to this peculiarity of formation.

It will have been observed that in the course of these remarks, I have more than once laid great stress upon the necessity of the thorough extirpation of the vessels from the internal canal of the tooth. My reasons for so doing are these: first, I conceive that if the vessels are completely drawn from the pulp cavity, the upper part from which they are separated will immediately retract, and close above the extreme point of the fang of the tooth; the vessels in retracting will also close the orifice that has been opened, by the rupturing or tearing of the vessel apart; by which means the passage of blood through it is at once stopped, and the chance of suppuration becomes extremely remote, if not absolutely impossible: at the same time the vessels of the periosteum of the tooth are entire, and the circulation is continued as heretofore; so that although sensitiveness and life are destroyed in the interior of the organ, the vessels covering the outside, and in connexion with the alveolus, are still active; exactly as we sometimes observe in trees and shrubs of different kinds that are decayed or pithless in the centre, while the bark, or periligneum, if in this case I may be allowed the term, retains so much of its former vitality as to produce leaves and new shoots; and although

we can understand perfectly well, that the tree, or the tooth, as the case may be, is not as perfect as it formerly was, we know at the same time that it is very different from a dead organ; and I believe that this is one great reason why some pivoted teeth last so many years to what others do. Again; supposing the vessels to be lacerated and driven into the upper and narrow part of the cavity, the natural consequence must be inflammation commencing in the cavity, and extending through the foramen of the fang by means of the wounded vessels, and consequently to the vessels of the periosteum; and if the inflammation so set up does not subside, either naturally or otherwise, suppuration takes place, and you have at once a case of alveolar abscess.

Some months since I read an account of an invention by Dr. Coghlan of Wexford, for obviating the inconvenience arising from a secretion of pus in the pivoted stump. It consists in making use of a tube for the pivot, instead of a solid piece of wire, by which means the secreted pus is allowed to escape into the mouth, and the force-pump action which he conceives to take place in fixing a tightfitting cylindrical pivot into a stump, with its consequences, are avoided. He says that he has found it answer, and would confidently express his conviction, that the use of the tube will remove the odium from the operation of pivoting which has hitherto been attached to it.

I find that Dr. Harris, of the United States, mentions the same kind of invention by Dr. Elliot, who after having invented it, found that it had been already used in France; so difficult is it to conceive an original, or at least a singular and original idea on any known subject.

The use of a tube in the case of a secreting stump, is in my opinion a decided improvement; indeed, I think there can be no doubt about it, nor do I see any *objection* to it in *any* case; at the same time, I must confess that I do not approve of pivoting to stumps from which there is any discharge; they are, to say the least of them, disagreeable and unhealthy, and I would not recommend them being made use of in any case. They ought to be removed; at the same time there are circumstances which occasionally occur, under which we are obliged to retain and use these unwholesome things; and in such cases the tube is certainly a great advantage: similar results may be produced by filing the sides of the pivot flat and tapering it in a small degree, or by making a small groove or channel at the side; but the tube is after all the best and most complete method of forming an outlet from the cavity.

Wood is occasionally used for pivots instead of gold, and I believe more particularly by our American brethren; for my own part I cannot see any advantage in its use for this purpose. In the first place it is not so strong as gold; and, secondly, it scarcely ever happens that the hole in the artificial tooth to be inserted, and the hole in the stump, are in a straight line together; and as wood cannot be readily bent, I think it a bad plan to use wood; except in old cases, where the hole in the stump has become so large and taper as to require filling previous to the insertion of a metallic pivot.

In conclusion, I will just state that I have here recorded my own experience, with an opinion founded on that experience; others, doubtless, have had similar experience, and have formed similar, or different opinions, according to the views they have taken, and the ideas suggested therefrom. Difference of opinion is the parent of argument, and argument if conducted with good sense and consideration on all sides, must ultimately produce the truth, one of the greatest and best objects of our existence; without which all our efforts to attain perfection will be but lost labour and mispent time.

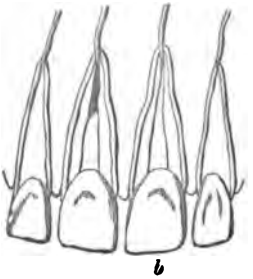
FIGURES 1.

The tooth marked *a*, represents a tooth with the pulp *partly* extracted, the remaining part being lacerated, and forced into the upper and narrow part of the cavity, renders inflammation almost certain, and periosteal suppuration probable.

The tooth *b*, represents a tooth with the pulp *entirely* extracted from the internal canal, and the ruptured vessel closed and retiring above the fangs. In this case, inflammation is scarcely possible, there being no wounded vessels to affect the periosteum.

c, horizontal section of unfavourable tooth for pivoting.

d, horizontal section of ordinary or favourable tooth.



b

a

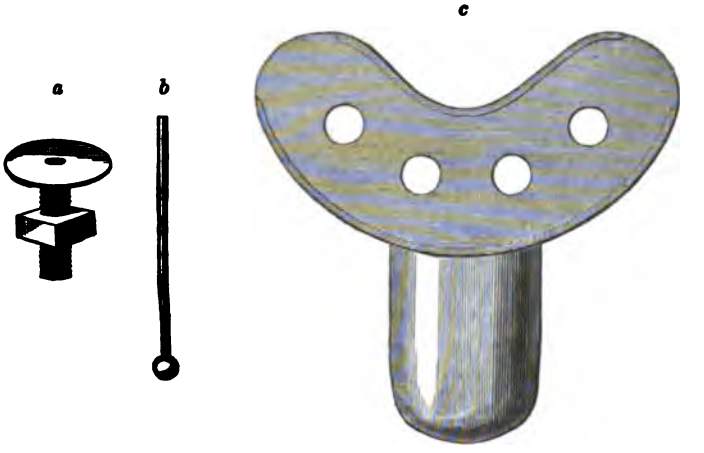
FIGURES 2.

For taking impression for a pivot tooth :—

a, hollow cylinder, with top plate and nut to fasten in wax tray.

b, pin to pass through cylinder into the stump to be pivoted.

c, plan of wax tray, drawn without the rim, which should not be more than a quarter of an inch deep.

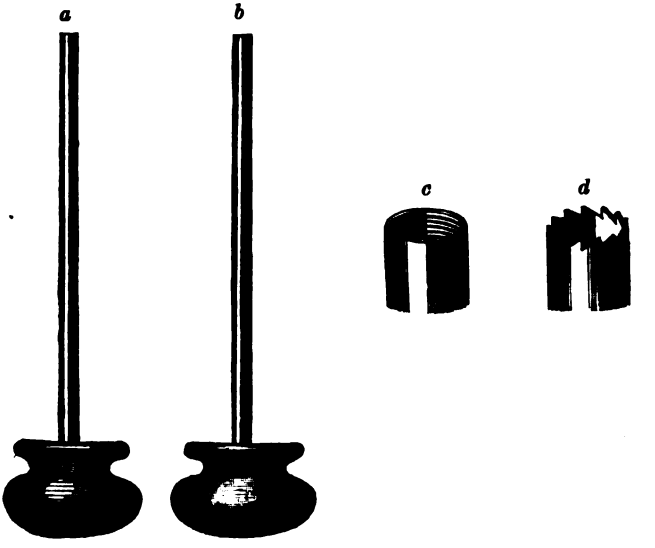


FIGURES 3.

For extracting pivots when broken close off :—

a, hollow cylindrical instrument to screw on to pivot, after *b*, trephine drill, has cut a channel round the pivot.

c and *d*, show the ends of trephine drill and hollow screw upon a larger scale than *a* and *b*.



A Member observed, that he had found a great advantage to arise from the use of a solution of gutta percha, in preventing the saliva from interfering during the process of pivoting.

Mr. Rogers never hesitated in performing the operation in the case of a first bicuspid, and he had recourse to it when he met with a sufficiently healthy first molar. With regard to the nerve, he had always found that pivoting might be accomplished immediately after the total destruction of the nerve. He had never fixed a tooth, immediately after this destruction, that gave any trouble afterwards. They might have the instrument ready; for in taking a model, he had never found any occasion for the use of such apparatus as that described by Mr. Perkins. At the same time, it appeared to him, that it was most important to preserve such a stump as that in which a pivot was broken. He hesitated, in general, to use the trephine, and always looked on pivoting in the light of stopping. With regard to the instantaneous removal of the nerve, he did not think the delicate sensibilities of the higher classes would endure that *(laughter)*. He really did not; except the operator had recourse to the trick of removing it, without having previously informed his patient of his intention so to do.

Mr. P. Mathews believed that it would be difficult to overrate the importance to the profession of the subject then under discussion; and, therefore, he felt it to be the duty of every Member to give the result of his experience in treating such cases as those which were the subject of Mr. Perkins's valuable paper *(hear, hear)*. That gentleman had said, that in cases where old stumps were found, alveolar abscess not unfrequently followed the cutting off of a portion of a tooth. Now, that was undeniable; and if he (Mr. Mathews) used the saw—which he did not, having, in such cases, abandoned it many years ago—he should prefer to use a small saw, and would be most careful to have as little friction as possible; as the friction caused by the saw in this operation was highly provocative of inflammation. In using the broach when dealing with the stumps of old teeth, great care was also requisite. He generally used a No. 4 or No. 5 square drill, with very sharp edges, and proceeded very slowly. But his mode of cutting the tooth was by an excising forceps, which fitted the crown of the tooth, and cut to the shape wanted, so that he never had any occasion to use the file, but after cutting, at once proceeded to apply the broach. *(Hear, hear)*.

Mr. Purland used a diagonal broach, and bored about three-fifths

the length of the stump. He destroyed the nerve with nitric acid, applied on a piece of gold wire; and knowing the exact length of the stump, he made his pivot rather shorter, because the nerve dropped on the pivot, and where the latter was too long, inflammation was sometimes the result. It was necessary to see the patient in a day or two after the operation, and hot water freely applied outside would remove inflammation. That was his plan for general cases; there were, of course, cases that required other treatment; but he did not see the necessity for all Mr. Perkins's machinery, which, however ingenious, was very complicated *(laughter)*. Having put in the wax, what was easier than to take the model? *(Hear, hear)*.

Mr. Perkins thought, that the principal difference of opinion was as to the mode of treating the nerve. Now he did not think, that there could be anything more objectionable, than the application of acid for the destruction, or extirpation of the nerve. He was decidedly of opinion, that extirpation was much preferable; as frequently alveolar abscess followed the use of acids. *(Hear, hear)*.

Mr. Bell observed, that the operation of the steel in destroying the nerve, was attended with very great pain, so great, that he was disposed to think very few would submit to it. He inserted the nitric acid on a small piece of soft wood: a sharp pain was the result, but one not at all so violent as that caused by the steel.

Mr. Perkins objected to wood, because it was clumsy, and did not go sufficiently far up. He would not venture to decide which mode should have the preference—touching the nerve with wood, or touching it with steel; but he was decidedly for steel, inasmuch as it went farther, and did its business in one second. As to the pain, it was intense while it lasted, whether caused by wood or steel. *(Hear, hear)*.

Mr. Bell wished to know, had Mr. Perkins tried wood?

Mr. Perkins had not.

Mr. Bell thought, under these circumstances, it was impossible Mr. Perkins could decide which was the better.

Mr. Perkins conceived, that one manifest advantage in steel was, that they could pass it up the entire cavity, while it was impossible to pass wood so far; or if they did, it would, in all probability, break. He had no doubt that Mr. Bell had succeeded in the use of wood; but he (Mr. Perkins) should not like to venture on it.

Mr. Bell had never known the wood to break.

Mr. Underwood thought, the application of the steel broach very

useful; but the operation required a firm hand, and should be boldly and rapidly done. He had found it a very good plan to pass up into the cavity a fish-hook, with a straightened point, and with the barb to catch the nerve, when the operation was very instantaneous. He objected to the use of strong acids, because of the injury which they did to the dentine. *(Hear, hear).*

Mr. David Hepburn had seen wooden plugs used with very uncertain effect in the taking of models, and that too in a vast number of cases. The difficulty was to get the wood cut so carefully as to mark a direct line to the orifice of the fang. He was in favour of having no pivot opening in the model at all, but of simply taking a model of the hole in wax; and if they got this, the immediate direction of the pin was not of so much consequence, as the slightest bending with the pliers would alter the direction so as to get the holes opposite. *(Hear hear).* Besides this, the character of the mouth was generally a quite sufficient indication of the direction of the fang. He should say, that he had listened with surprise to the remarkable statement made by an experienced Member, as to his cutting off with an excising forceps a tooth in such a manner as to leave the stump fit for pivoting. He (Mr. Hepburn) had never seen a case in which it was not necessary to apply the file in some form or other. He should very much apprehend, that the use of such force as this operation with the excising forceps required, would break the fang, or bring away the root. As to having a gold tube to allow the pus to escape, such a tube must be very large, or very weak. He had seen many cases in which the decay was very considerable, and the wood plug was used, but he did not think wood a good material for the purpose in ordinary cases. As to the preparation of the material for the model, honey was a very good substitute for oil, and was not liable to the objection to the latter on account of its taste. With respect to the destruction of the nerve, he gave the preference to its destruction by steel. *(Hear hear).*

Mr. Mathews could assure Mr. Hepburn, that during the many years which he had been using the excising forceps, he had never known so untoward an event as the breaking of the fang, or the coming away of the root of the tooth, to occur. But he had known this advantage to arise, that in cutting off the crown of the tooth, the nerve was carried off along with it. *(Hear, hear).*

On the motion of Mr. Mathews, the further discussion of the subject of Mr. Perkins's paper was then adjourned till the following monthly meeting.

MONTHLY MEETING, JUNE 2.

The discussion on Mr. Perkins's paper was resumed this evening.

Mr. Mathews exhibited his excising forceps, and also specimens of teeth cut off by that instrument.

Mr. Rymer observed that he had known several cases in which bicuspids had been pivoted; but his opinion was, that as a general rule, it was not desirable to do so. *(Hear).*

The President should say, that he had not been so fortunate in practice as his friend Mr. Mathews; for while Mr. Mathews had never had an "untoward" case in cutting off a tooth for the purpose of pivoting, he (the President) was bound in candour to confess that he had had several. *(Hear).*

Mr. Mathews had been misunderstood. When he said he had never had an "untoward" case, he meant that he had never been so unfortunate as to bring away the fang with the portion of the tooth intended to be excised. Some gentlemen had expressed their apprehensions that such a result would follow the use of his excising forceps; and in answer to them, he said that he had never had so untoward a case. *(Hear).*

Mr. Perkins thanked the Members and Associates for the interest they had manifested in the subject of his paper. With many of the observations made by gentlemen who had taken part in the discussion he fully agreed; and in reply to what had been stated by others, he should say, that he still adhered to the views which he had ventured to put forward in his paper. *(Hear, hear).*

A warm vote of thanks was then passed to Mr. Perkins, for his very able paper.

THE ELECTRIC CAUTERY, AND ITS APPLICATION TO DENTAL SURGERY.

Mr. T. Harding then read the following paper:—

Mr. President and Gentlemen.—I cannot refrain, at the com-

mencement of this paper, from observing, that it has been with great satisfaction I have come forward, as a Member of the College of Dentists, to lay the result of my experience in Dentistry before this body, and I trust, that the great bulk of our Members will not fail to give the result of their's in good time. The College of Dentists, I feel assured, is destined to become a great body in this country, and will not be behind its sister Colleges in the United States of America, where Dentistry occupies a distinguished rank, as well as in the province of Canada adjoining. Every good wish has been uttered for the prosperity and success of the College of Dentists of England, which many enterprising men have described as an Institution which had long been wanted here, for the advancement of Dental Science. Our sphere of usefulness has already been extended by the delivery of lectures, which have been well attended; and a Charter of Incorporation is now only required to render the College of Dentists everything that its promoters and founders could wish.

It will be as well, at the commencement of the present communication, just to glance at the history of the introduction of the electric cautery, and its general application in surgical practice. Crusell, of St. Petersburgh, was the first to employ it for surgical operations, although his researches generally, on its use, were not published before the year 1846, yet his operations bear date anterior to those of any other surgeon.

In 1844, M. Louyet, of Brussels, recommended the operation for destroying the dental nerve; and in 1845, Heider, of Vienna, at the instigation of Steinheil, of Munich, cauterized the dental nerves with the galvanic cautery. In 1850, Mr. Marshall was the first to employ it in practical surgery in this country, but his researches were not published before 1851, when he brought the subject before the Royal Medical and Chirurgical Society in April of that year. In the same year I published a short paper on its use in dental surgery, being the first to adopt it in that special branch of surgery in this country; and in the same journal, "The Lancet," a paper also appeared from Mr. Waite, recommending its use in dentistry.

Since 1851, it has been generally employed by others in England, France, and Germany.

Being deeply impressed with the great value of this powerful agent, in many of the most delicate operations which come under the hand of the general surgeon, from reading the papers communicated

to the Medico-Chirurgical Society by my friend, Mr. Marshall, giving in detail an account of the manner in which he employed the heat of electricity for the purpose of limited cauterization in surgical disease, an abstract of which appeared in "The Lancet," in May 1851; and, again, a subsequent report of several operations performed by him, in which the results showed most satisfactorily the great value of this new agent, it struck me that its introduction into the practice of dental surgery would prove of inestimable value, and of the greatest possible assistance, in effectually destroying the sensitive pulp of a decayed tooth, in a more certain, rapid, and safe manner than any of the numerous methods with which dentists are already familiar. I therefore conceived the idea, that a platinum wire, heated in the manner as recommended by Mr. Marshall, might be made available for the instantaneous destruction of an exposed tooth-pulp. I accordingly communicated my idea to Mr. Marshall, who fully concurred with me as to its importance. It had already suggested itself to his fertile mind, and had been mentioned by him as one of the obvious applications of his method of operating with the electric heat. His experience in this matter, moreover, enabled him to suggest for the purpose a very simple and suitable apparatus, which shall shortly be described.

In the first volume of "The Lancet," for 1851, there appeared a short communication from me on the destruction of the dental pulp by the heat of electricity, wherein I confidently stated that it might be regarded as a great advantage by all engaged in the practice of dental surgery. I had employed it for some months previous to the appearance of that paper, and fairly and justly claim to have been the first to use it in dental surgery in this country. In the same number of that journal was described an instrument for applying electric heat in dental operations, by Mr. Waite; but I had used it before the time mentioned by Mr. Waite, and moreover was not acquainted with his invention.

Now other methods have been employed for applying heat to destroy the nerve of an aching tooth. The old village doctress has long been famous for curing toothach by the thrust of a hot needle or pin into the tooth, and dentists have occasionally used a heated wire. The actual cautery has long been a practice in vogue, for the purpose of destroying the sensibility of the tooth-pulp from caries, and has been generally performed by heating a long piece of steel, small at one end, but terminating in a bulbous head, about the size of a small

pea, which is inserted into a handle. From the bulbous extremity projects a piece of platina wire, smaller or larger, according to circumstances; the bulbous end being heated in an ordinary lamp, until a red or white heat is obtained, communicates the heat to the platinum wire, which is then immediately used for the purposes required. Another method of applying hot wires to the teeth is by means of platinum sponge and hydrogen gas, known as œropile; but I have had no experience of the use of this.

In regard to the use of the actual cautery, let us see what Mr. Snell says of it in his book on the teeth: he says—"Even now, it (the destruction by the actual cautery) is frequently performed in an improper manner, which will account for the want of success which often attends it when attempted by ignorant men. As the operation is very generally performed, it would be more properly styled carbonizing the cavity of the tooth generally, than simply cauterizing the membrane." It must be obvious to every one, that the great cause of failure, such as is here described, depends upon the difficulty experienced in obtaining a sufficient and permanent amount of heat; for it is well known, that wire alone, which is the only substance sufficiently minute to be applied within the interior of a tooth, can retain the heat for but a very limited time. It is therefore necessary, in the hands of some dental surgeons, who are not satisfied with its effects, to apply it to the tooth, certainly more than once, perhaps several times in succession. This must prove of serious injury to the teeth, as it will carbonize a large surface of the tooth generally, instead of cauterizing, or destroying the tooth pulp solely. Now all this is completely removed by the use of the electric cautery, which can never be surpassed for convenience and ready mode of application, besides possessing a steady, uniform, and constant degree of heat, which can be continued at pleasure until the proper effects are obtained, and then as magically discontinued by destroying the connexion between the positive and negative wires. It has the advantage also, over every other known method of cauterizing, that it can be introduced into the patient's mouth, and actually placed within the cavity of the tooth, before it is made to become incandescent—an advantage that cannot be over-estimated by those conscientious dental surgeons who are so frequently called upon to destroy a tooth-pulp.

The nature of the apparatus which I am in the habit of using may be thus described: I shall speak of the battery first, and the cauterizer after:—

The *battery* is a compound one of Smee's, and consists of six pairs of plates of zinc and platinized silver, contained in six cells, which are set in action by one fluid, viz., dilute sulphuric acid. The battery may of course vary according to the choice and taste of the operator, but it is desirable to render it as elegant and as simple in arrangement as possible. When I first employed the electric cautery, I used a battery of two pairs of plates in a single cell. I now prefer the larger battery of six cells, because a large battery with weak acid will last longer than a small one with strong acid; besides this, the action of the battery is more uniform, and lasts much longer. A Smee's battery is the most convenient of application; it is always clean, ready when wanted, and has the advantage moreover of cheapness. Grove's and Maynooth's batteries are not fitted for the purpose required, as they are troublesome, and often give out fumes of nitrous acid, which are decidedly objectionable.

The *cauterizer* is thus constituted: the terminal six inches of the poles, which are of copper wire plated, are supported on an ebony or ivory handle, upon the side of which one of the poles is interrupted at a particular point. The extremities of the poles are connected by a piece of platinum wire, a hundreth of an inch thick, and three-quarters of an inch long, which is bent into a loop. The sides of the loop are then brought parallel and nearly close to each other, without touching, and it is thus introduced into the pulp cavity of the tooth to be operated on. By a slight pressure on one side of the handle, the interrupted pole is temporarily joined, and the platinum wire immediately becomes brilliantly heated, as it lies in contact with the tooth-pulp. Sometimes, however, I have found it desirable in the first place, to complete the galvanic current, and thus heat the platinum wire, before bringing it to bear upon the exposed pulp. The flexibility of the loop of wire enables the operator to bend it in any direction previously to use. In this way I have succeeded in rapidly destroying the pulps of decayed and condemned teeth, and have proceeded, sometimes after a few minutes, to the operation of filling with gold, or with other suitable stoppings, as Ash's metallic paste. I use several cauterizers with extremely thin wires, made expressly for myself by Coxeter, of Grafton-street, and Maddox, of University-street.

Of the Operation in general.—The affected tooth being carefully examined, its cavity is to be well dried out and cleaned; a soft napkin is then introduced, to protect the mouth from the possibility of contact with the instrument, the platinum point of which is passed

into the cavity of the tooth; it is then heated, and, from its brilliancy, gives a clear and distinct light, and the tooth-pulp is lightly touched with the heated wire, and the whole or particular portion of it required is destroyed. If the operator prefer it, he may have the wire heated before introduction into the mouth, but my own practice is generally to apply the wire before doing this, and then permitting incandescence to take place in the mouth, which gives a light which is not seen by the patient, and so well illuminates the interior of the tooth, as to permit the tooth-pulp, or diseased membrane, to be seen very distinctly and clearly.

There is some caution to be observed in the use of this agent, which it will be as well to mention, and that is, to avoid burning or otherwise injuring the solid part of the tooth; particular attention and care should be paid to this point. This will not happen unless the application is prolonged, which will very rarely indeed be required, if special care be observed to have the wire at a white heat. This is the more necessary, to produce speedy destruction of the part to be touched, which is effected almost instantly. In one instance under my care, that of a lady for whom I nipped off the crown of an incisor tooth, for the purpose of fixing some artificial teeth, and so exposed the pulp of that tooth, I applied the electric cautery at barely a red heat, owing to feebleness of the acid; the consequence of this was, that the dental pulp became attached to the end of the wire, and was actually drawn out entirely. This has been preserved. It gave some slight pain for the moment, but nothing in comparison to the pointed steel or silver wire used by most dentists. This perhaps unimportant accident, I think, would not have occurred had the cautery been at a white heat, as it would then have completely carbonized or destroyed the part with which it came into contact.

The *effect* of the operation is the rapid destruction of the pulps of the decayed and condemned tooth; not the whole of the pulp, for that is not always necessary, but that portion of it especially which is exposed. If this is done with a light, steady hand, no subsequent inflammation is produced upon the substance of the tooth, or in the cavity. If there should be any marked sensitiveness in the tooth, independent of the pulp, the slightest application of the cautery to it will prove effectual in completely removing it. In the large number of cases in which I have employed the electric cautery, I have never known any bad effects produced on the tooth, and this I attribute to the care with which it has been applied. I am, however, quite pre-

pared to believe that a want of attention in this respect would not only prove injurious to the tooth, but even in many instances cause its destruction. It would be only under such circumstance that the operation could be attended with or followed by severe pain.

In whatever condition the tooth-pulp may be, the operation is associated with a little pain. But as the time of its application is not unfrequently just a second or so, in the large majority of instances in which I have employed it, there has been no pain whatever felt. There may be a sort of a twinge, which is but momentary; and whatever pain may arise is not to be compared to that arising from the process of extracting a tooth, which, as is well known, is by no means free from a very considerable amount of pain. Some of my patients have felt so little when it has been applied, that they have asked me to apply it a second time, to make all certain that the dental pulp has been effectually destroyed.

The subsequent filling of the tooth is a matter which demands attention after the pulp is destroyed. If the cavity is examined very minutely, a small black speck, or spot, can be seen after the cautery has been used; this is due to the carbonization of the pulp, and is a guide to some extent in the after process of removal of the carious portion of the tooth, which should always be done after the sensibility has been destroyed by the electric cautery, and is to be accomplished with care in the usual manner, taking the precaution to leave none of the tooth in that condition remaining; every particle of it should be removed. For a few days afterwards, sometimes only one, but generally two, the cavity is allowed to remain filled, with a combination of morphine and mastich, and then the tooth is stopped. Sometimes, again, I request my patients to allow a few days to elapse before I stop their teeth, the cavities being in the meantime filled with a solution of mastich and camphor. But I occasionally accomplish what I believe no other dentist has done, and that is, to plug, or stop the cavity in the same sitting during which the pulp has been destroyed. This, however, depends upon the complete absence of pain after the use of the cautery. I have already stated, that there is always a little pain, but sometimes this at once disappears, and I then do not hesitate to stop the teeth permanently. I also do this if there has been a little bleeding from the cavity previous to cauterization, stopping the tooth immediately. It might be supposed this procedure of stopping the teeth immediately after the destruction of the pulp, would be always followed by dull aching pain; but I am happy to

say, that not the slightest indication of pain has, in the great majority of instances, ensued, in rather an extensive use of this powerful agent.

As a rule, however, the tooth should not be stopped on the same day as the electric cautery has been employed, unless in the exceptional instances just mentioned—the removal of the carious portion not being followed by sensibility. Experience and practice teach us to know the proper cases which can be plugged immediately.

By waiting a day or two, I have found, by experience also, that any sensibility remaining after the destruction of the dental pulp, and removal of the carious parts of the affected tooth, is sure to disappear, assisted by the solution of morphine and mastich, or mastich and camphor, which occupies the cavity. By this time the cavity will bear the pressure of an instrument within it, and an examination will show that the destroyed pulp has receded considerably inwards; this is apparent by noticing the black discoloration from the previous carbonization of the affected part, and as it is deeply situated, it is either out of the way of being pressed upon by the stopping of the tooth, or becomes a matter of the smallest possible importance, so far as my experience permits me to judge in this respect. I must, however, warn others not to mistake the black speck here referred to for actual caries.

Under the various circumstances which have been mentioned, the *results* of the operation are completely successful, and the teeth are serviceable for years. If, however, a tooth should remain tender after the use of the cautery, it is always better to wait for its complete disappearance before proceeding to stopping. I cannot call to mind any single instance in which the pain was at all persistent after its use, but it will be sure to become so, if the tooth is one not fairly suitable for preservation, from being either loose or diseased at the termination of a fang, such as a small fungous growth, or some similar cause. In such cases, as I will shortly show, the destruction of the tooth-pulp, accomplished no matter by what method, will prove unavailing and unsatisfactory, ultimate extraction in such instances proving the only resource. Should there be associated inflammation of the gums with a carious tooth, in which the pulp has been destroyed in the manner which has been recommended, then the usual means for combating it must be resorted to, such as a leech or two to the gum, and repeated fomentations with warm water alone, as I am in the habit of recommending, or with warm milk-and-water, or a poul-

tice. For the pain in the tooth itself, morphine and mastich will be found quite sufficient.

Some patients express the receipt of immediate relief after the use of the cautery, others, again, not for an hour or two, but eventually they are quite relieved; the pain, however, is, I repeat, extremely slight.

In the large number of instances in which I have used the electric cautery to destroy the sensitive tooth-pulp, I have not known an *accident*, in the true sense of the word, to happen, unless I should except the case in which the dental pulp was suddenly drawn out attached to the platinum wire, which I have preserved for illustration, and depending upon, as has been said, the wire being at a red instead of a white heat. Such a circumstance might occur again in the hands of others. To avoid injury or accidents to the teeth or gums, it is necessary to keep the hand quiet, firm, and steady; the heated wires, if suddenly dislodged, would assuredly burn the cheek or gums, the tongue or palate, especially if steadiness was not particularly observed on the part of the patient. It was, I may say, only the other day, that an accident of this kind happened to a lady, in whose tooth I was applying the cautery; she suddenly turned her head, from some cause, when the heated wire touched the internal surface of the cheek. It may be observed, however, that so rapidly can the disconnection of the wires be accomplished, by removal of the finger from the handle of the instrument which is held in the hand, that an accident can really very seldom occur from the heated wire.

Having thus considered the history of the use of the electric cautery in general surgery, its application to dentistry, the nature of the apparatus employed, and the general features of the operation, together with its effects and results, I shall, in the next place, make a few observations upon the cases which are suitable, and upon those which are unfitted for its use; and will then draw a comparison between the use of the cautery and other methods of destroying the pulp.

Of the operation in particular.—The great object of this operation, which I am endeavouring so strongly to recommend in the present communication, is to destroy the irritable ulcer in the membrane of the tooth which permits the nerve to be exposed, and which is often associated with the presence and even protrusion of minute granulations, not dissimilar to what the surgeon meets with as protruding from an ulcer situated over a carious or necrosed bone in some

other part of the body. This condition is accompanied with a certain amount of inflammation and tumefaction. The cautery, as I have said before, completely destroys the affected parts, and there is no time left to produce a new surface; nor do I think that could be accomplished after the destruction of the pulp; nor, again, is it a necessary measure, as no particular good could be derived from it, were it to be permitted to occur. The cavity is at once plugged and the admission of air to the tooth prevented, and the sensitiveness and carious condition are permanently removed.

Now, of the *proper cases* in which the electric cautery may be used, the most important and common is that known as severe ordinary toothach, especially that form of tooth affection arising from a cavity with exposure of the tooth-pulp. In cases also of cavities requiring filling, in which too great a sensitiveness is present, thus preventing the satisfactory removal of the carious portions of the tooth, it is equally valuable. It is useful also in cases where the gums have receded, with exposure of a part of the neck of a tooth, which is extremely sensitive and oftentimes very painful to the touch; in these it is necessary merely to touch the exposed necks, to remove the sensitiveness. It is not less serviceable in its application to tender, sensitive, and bleeding gums, producing a new and healthy action, which permits them to become firmly attached again to the necks of the previously-exposed teeth. Sometimes it is merely necessary to hold the heated wire near a sensitive neck, without actual contact, to remove the tenderness. I have destroyed, with the greatest ease and rapidity, the pulps of the incisor teeth which have been cut off for the purpose of being pivoted. Every dentist is aware of the sensitiveness which sometimes exists in a pivoted incisor tooth, depending upon the vitality of the stump; this is completely obviated by the use of the cautery. I have employed it also in numberless instances in which unusual sensitiveness exists to both warm and cold substances, depending upon a variety of causes—such as exposure of the necks; or arising from chipping and fracture of the tooth from brittleness or some other cause; or, again, where the tooth has been filed, cut, or accidentally broken. A very striking instance of this kind—that is, unusually great suffering from taking either warm or cold liquids into the mouth—came under my care but the other day, in which permanent and complete relief was afforded from the electric cautery. If a tooth is snapped off at the neck, and the pulp-cavity becomes exposed and painful, it can be destroyed, and an artificial tooth may be

fastened to the stump, in the same manner as when the tooth is intentionally removed for this purpose. Sometimes, also, bleeding will occur from the rupture of some minute capillary vessels during the removal of caries from a cavity which may have become morbidly vascular, without the presence of actual pain or even sensitiveness; it is equally serviceable here as in other forms of disease, and stops the hemorrhage, which is inconvenient and troublesome, from its interference with the progress of stopping the tooth. I have also applied it in sensitiveness, arising from the wearing away or grooving of a tooth from the constant pressure of the spring clasp of a plate, which has caused the destruction of the dentine; mechanical friction, in fact, producing this condition.

As a general rule, the electric cautery may be used with decided advantage in almost every case of diseased tooth, with very few exceptions. But the commonest affection *constantly* requiring its use, I again repeat, is ordinary *toothack*, not unfrequently most agonizing in its character, and depending upon the presence of a cavity from caries, which has laid bare the delicate nervous pulp contained in it, which, so long as it is likely to come into contact with the liquids and solids of the mouth, will continue in this condition. Destruction of the pulp and subsequent stopping prove the remedy; the nerve is destroyed, the pain disappears, and the tooth remains for years, and answers as well as if it had been filled without exposure and destruction of the pulp.

The electric cautery therefore saves many a tooth which without its aid, would be otherwise totally lost. It is preserved for years, and perhaps it is not saying too much, that, if ordinary care and precaution are used, it will most probably last the life-time of the individual. This, perhaps, may seem to be problematical, as many dentists would declare that, if the nerve is destroyed, the tooth is dead; it is a foreign body, and will last but a few years, ultimately decay, and require extraction. The cautery certainly destroys either a portion or the whole of the dental or nervous pulp: I will say, for argument sake, that it does completely and effectually destroy the nerve of the tooth. The tooth, however, receives nourishment from the periosteum covering its fang, as well as from that lining its socket, and it would seem that there may even be minute nervous twigs accompanying the equally minute capillary blood-vessels which afford life and sustenance to the plugged tooth. It cannot therefore be looked upon as a foreign body, as it possesses and retains its

vitality, which is derived through its fang, or, in other words, from without, and is thus capable, from the reasons mentioned, of lasting with proper care the patient's lifetime. Mr. Nasmyth has beautifully shown, that a tooth is supplied with a large number of minute nervous twigs and blood-vessels.

I must also speak of another form of affection which has been relieved by it—namely, neuralgia of the face—a form of tic douloureux, supposed to depend upon some other cause than a carious tooth. On examining the mouth, however, I have detected an affected tooth, on destroying the pulp of which with the cautery, and subsequently stopping it, a permanent cure has been effected.

It may be recommended as admirably suited to destroy fungous growths springing from the internal pulp, which often bleed very profusely on the slightest touch.

It will thus be seen, that the application of the electric cautery is wide and extensive in the number and variety of cases of tooth disease.

The following, however, *are unfit for it*, as it would not only produce no good, but harm might result from its use :—

When a tooth is loose, with its external aspect sound, but the pain depending upon the presence of a fungous growth or small abscess developed at the end of one or more of the fangs. In such a case, extraction only will afford relief.

It will prove of no avail in an attack of inflammation of the central pulp, which may sometimes affect a tooth that is otherwise apparently sound. This may be known by the severe, heavy, throbbing pain which it occasions, running up to the head, accompanied with considerable tenderness of the tooth, and the gum around it. This condition may go on to suppuration of the pulp, or to abscess of the alveolus, and consequent death of the tooth. Leeches are here useful, conjoined with some slight constitutional treatment.

And lastly, when we find a black, unsightly tooth lying loose in its socket, with pain depending upon the irritation produced by its presence, the cautery will be ineffectual, as the tooth is in a true state of necrosis, is quite dead, and has truly become a foreign body; it must therefore be removed. This condition I have not unfrequently seen to depend upon the use or abuse of mercury.

If a *comparison* be now instituted between the electric cautery, as I am in the habit of employing it for destroying the tooth-pulp, and the numerous other means recommended to effect the same pur-

pose, it will be seen that the balance of my confirmed judgment is entirely in favour of the former. Thus the great advantage of the cautery is, that the desired effect is produced in less time than a minute; whilst it takes days, and even months, to accomplish destruction of the pulp by the various substances habitually in use: amongst these may be mentioned arsenic, used either alone, or in combination with other substances, as, for instance, a mixture of equal parts of arsenic, morphine, and creosote; chloride of zinc, in the solid form, or a combination of it and chloroform; cobalt, chloroform, creosote, gun-cotton, tannin, and tannate of lead. Nitrate of silver is used, or nitric acid on a gold wire. Many other substances are employed. The nausea produced by the use of chloride of zinc, or nitrate of silver, is particularly disagreeable. I have, however, the strongest objection to the use of arsenic, more so than to any other substance; and it is not without much thought on the subject, that I have come to the conclusion that it ought not to be employed in dental surgery. I have known instances in which this agent has been used, and the most acute and severe pain—in fact, absolute torture—has followed for several days, before stopping the cavity could be accomplished. Besides the pain, there is also the danger arising from its absorption. A few months ago, a case of fatal poisoning appeared in the journals, which depended upon its absorption after employment in a dental operation. Added to the time required to destroy a tooth-pulp by these various substances, there is also the mischief caused by their local application to the teeth themselves, which should not be lost sight of in the consideration of this question.

Conclusions.—I have now been in the habit of employing the electric cautery for upwards of six years, and during that time, have used it in more than five thousand instances, with an amount of success that has surpassed my most sanguine expectations, and without the occurrence of a single accident worthy of mention. I may truly say, that there are very few cases of toothach which cannot be relieved by it, when the membrane or tooth-pulp can be got at to destroy it. These very few cases are the exceptional instances which have already been referred to. It has been held by writers on diseases of the teeth, that the impossibility of instantaneously effecting the absolute destruction of the tooth-pulp in such teeth as are situated at the back of the mouth, which possess several diverging roots, is a sufficient ground for rejecting the means which were employed for that purpose—namely, the heating of a wire, in

the form of the actual cautery, which cannot at any time be maintained at a white heat. It was in consequence of this very great difficulty that the actual cautery has fallen into disuse. Now, the advantage which the electric cautery has over every other conceivable method, is, that the white heat produced, and which cannot be obtained in any other manner, effects the purpose desired suddenly and with completeness. Besides this, it can be applied with perfect ease and freedom to teeth situated in any part of the mouth without the risk or danger of burning it—a risk almost impossible to avoid, with the greatest care, when the actual cautery or heated iron was employed.

It might be supposed, again, that some imaginary terror is likely to be excited in the patient's mind, at the idea of the electric cautery, in the shape of an incandescent body being used for any purpose in the mouth. I can truly say, that in the large amount of experience of its use which has fallen to my lot, that there is not the slightest ground for such a supposition. If this be an objection to its employment, then it falls to the ground, for I can call to mind no instance where this fear was manifested. Sometimes, as has been before mentioned, the wire is introduced already heated into the mouth, when being applied to the tooth.

At one time much dread of the actual cautery arose, from the burning of the mouth by the heated handle of the instrument, which was unavoidably employed to keep the wire hot, and this occasioned, we believe, its comparative rejection in this country. With the electric cautery such accidents are avoided; I may say, they scarcely ever occur, in the hands of any ordinarily skilful man, for, owing to the extreme fineness of the wire employed, the local heat, though intense, is very limited in its action, and with due care the tooth substance need not suffer any appreciable injury. For the same reason, with the additional and more powerful one, of suddenly breaking the connection between the poles of the battery, no injury can happen to the mouth or gums.

Such, then, are the uses and advantages of this valuable agent in dental practice, and so well known is it becoming to a large number of the public, that a considerable proportion of my patients come recommended to me by medical men and others, for the express purpose of cauterization by it.

In March, a lady, to two of whose teeth I applied it instead of extracting them, writes to me, "Neither of my teeth have given me

the least uneasiness. I am sure I have much to thank you for. Now, one need not fear the approach of toothach; we are so much more favoured than those who lived a hundred years ago." These two teeth were, I may observe, cauterized and stopped at the same sitting.

I can now with still greater confidence, and much larger experience, lay this most valuable and efficient remedy before the notice of my professional brethren than I did in 1851. Very many years' constant trial have only further convinced me, that for ingenuity, simplicity of contrivance and application, nothing that has hitherto been invented can surpass it; and I again confidently leave it in their hands, gladly availing myself of my connection with the College of Dentists, as one of its members, as a medium of doing so. *(Hear, hear).*

I feel great pleasure in thanking you for your kind attention during, I fear, the tedious delivery of my paper on the electric cautery *(no, no)*, and at some future period, I shall be most happy to prepare another paper, which I hope will meet with the same indulgence which you have so kindly extended to the one I have just read. *(Hear).* Permit me again to express a hope, that every Member of this College will not lose an opportunity of contributing his mental and physical energies for the benefit of this College, and the advancement of Dental Science, feeling as I do, that the prosperity of this excellent Institution mainly depends on our united exertions. I mentioned, that I felt much indebted to Messrs. George Knight, of Foster Lane, for the apparatus, and neatly-constructed battery that they sent to the College of Dentists. *(Hear, hear).*

Mr. W. G. Bennett, Associate, inquired, of what metal the conductor was composed at the point, where contact was made, and broken; and finding it to be silver, said, he had found it advisable to have it coated with gold, silver being so easily tarnished by means of the sulphur of the atmosphere, the compound formed, being a bad conductor, whereas, the surface of gold always remained clean, and in good order.

The President observed, that he had for several years employed the electric cautery, as first introduced by Mr. Harding, for destroying the sensibility of the dental pulp. He could not say that his applications were invariably attended with success; on the contrary, he found, by experience, that it was necessary, after its application,

to wait even a month, nay, in some cases, even three or six months, before he stopped the tooth. During the interval, he ordered the patient to dress the tooth with some kind of sedative, in conjunction with spirit; such as, for example, three grains of morphia, mixed with two drachms of a saturated solution of camphor, in either chloroform or spirits of wine; in fact, he had found the preceding remedy an excellent dressing in all cases of exposed pulp or sensitive dentine. But he must confess, that in those cases wherein he had employed the actual cautery, and filled the tooth some three or four days after, the results were invariably periostial inflammation, accompanied with alveolar abscess, and either the tooth had to be immediately extracted, or the stopping removed, and an antiphlogistic mode of treatment employed. He therefore arrived at this conclusion, that if the actual cautery be employed, it is necessary that the vitality of the tooth should again recover its normal state. *(Hear hear).*

Mr. Mathews observed, that in applying the electric cautery, great care should be used in conducting the wire to the spot on which it was required to act, without allowing it to touch, when heated, the enamel, or other portion of the tooth.

Mr. Harding thought, that the objections made by gentlemen would be found very fully answered in the paper which he had had the honour to read to the College. He had had very extensive practice in the use of the electric cautery, and he felt no doubt that it was the most perfect cautery that could be used. *(Hear, hear).*

Thanks were then voted, amidst applause, to Mr. Harding, for his interesting and instructive paper.

MUSEUM AND LIBRARY REPORT, JULY 1857.

The following is a list of articles which have been presented to the Museum and Library of this College, since the last report, May 5, 1857, viz.:—

Adult Skull, with irregular development of teeth.—Presented by W. Hutchins, Esq.

Skull of Child, with temporary and permanent teeth.—Presented by W. Hutchins, Esq.

One set of superior Maxillary Bones.—Presented by W. Hutchins, Esq.

One set of the superior and inferior Maxillary Bones, teeth complete, with exposed fangs.—Presented by W. Hutchins, Esq.

A Case, containing various specimens of Corundum Wheels, &c.—Presented by Messrs. Pratt & Fletcher, Piccadilly.

Eight grains of Fluoride of Silicon—Presented by H. L. Jacob, Esq

Two specimens of four-fanged upper Wisdom Teeth.—Presented by R. Thomson, Esq.

Model of a Pyrometer, for measuring heats higher than can be indicated by the mercury.—Presented by Donaldson M'Kenzie, Esq.

Skull of a Cat.—Presented by Charles James Fox, Esq.

Specimen of Bone-fitting of twenty years ago.—Presented by J. Harley, Esq.

Case of Exostosis.—Presented by John Lee Statham, Esq.

Dr. Reid's "Dental Compress," for arresting alveolar hemorrhage.—Presented by Dr. Reid.

Case of various specimens of deciduous Teeth.—Presented by — Parker, Esq.

Case containing various specimens of Adult Teeth.—Presented by — Parker, Esq.

CHARLES JAMES FOX,
Hon. Librarian and Curator.

LECTURES.

BY DR. GLADSTONE, F.R.S.

ON BONE, ENAMEL, AND THE METALS, ETC. USED IN DENTISTRY.

The following is a summary of the lectures delivered by Dr. Gladstone in the College of Dentists:—

LECTURE 1.

The lecturer commenced by refering to the previous lecture by Mr. Hogg, in which he had shown that, in the words of Prof. Huxley, "the teeth are true dermic structures, formed by the deposition of calcareous matter beneath the basement membrane of a dermic papilla, or that which corresponds with one." Thus far the anatomist and physiologist might proceed; it remained for the chemist to examine

the composition of these dental tissues, and the calcareous matter deposited in them.

The tissues themselves were exhibited to the audience by dissolving out the mineral portion of a tooth by hydrochloric acid. This "cartilage" is an organic principle, composed of carbon, hydrogen, nitrogen, and oxygen, with, according to Schlieper, 0.13 per cent. of sulphur. When boiled in water it swells up, and dissolves, yielding, according to the observations of the lecturer, made on human teeth, pure gelatine, and no chondrine. There is also a small quantity of membrane, which is not gelatinized by water, with the blood-vessels, nerve-substance, and a little fat.

The hard portion of the tooth consists of lime, in combination with phosphoric and carbonic acids and fluorine. A little magnesia replaces a portion of the lime. Certain soluble salts are sometimes mentioned in analysis of teeth, but these were considered scarcely to belong to the hard portion, and always occur in very small and varying quantity. On the addition of ammonia to the solution in hydrochloric acid, the original phosphate of lime and fluoride of calcium appeared as a flacculent white precipitate; and on the subsequent addition of carbonate of soda, the carbonate of lime was reproduced as a chalky deposit. The following are the average proportions of these constituents, as deduced from the best analysis published:—

	Bone.	Dentine or Ivory.
Phosphate of lime	57	65
Carbonate of lime	8	5
Fluoride of calcium	1	1
Phosphate of magnesia	1	1
Cartilage	33	28
	100	100

	Enamel.
Phosphate of lime	85.0
Carbonate of lime.	7.5
Fluoride of calcium	3.0
Phosphate of magnesia	1.5
Membrane	3.0
	100.0

The cement differs from bone merely in containing rather more organic matter. Different individuals, however, differ considerably

in the composition of their teeth; molars, as a rule, contain more mineral substance than incisors; and as the teeth become older, they change somewhat, principally by the great diminution of the carbonate, as compared with the phosphate of lime. The following table from Lassaigne's experiments was among the diagrams exhibited.

	Organic Matter.	Phosph. Lime.	Carb. Lime.
Child of one day	35.0	51.0	14 0
Child of six years	28.6	60.0	11.4
Adult man	29.0	61.0	10.0
Man of eighty-one years	33.0	66.0	1.0

The lecturer then passed on to consider the chemical changes that take place in the teeth. There are changes from within—growth, and repair, besides disease and decay—a subject claiming the most serious attention of the dentist, but one to the knowledge of which chemistry as yet has made no valuable contribution. There are changes from without, dependant on the action of whatever passes into the mouth. The most constant of these agents is the saliva—a secretion from various glands. Now this substance has been shewn to differ in composition, as derived from the parotid gland, or from those in and beneath the buccal mucous membrane; and though analyses, more or less complete, have been published by Wright, Mitscherlich, Berzelius, Tiedemann, Gruelin, Lehmann, Frerichs, Van Setten, Magendie, Bernard, L'Heritier, Rayer, Enderlin, Tilanus, Jacubowitsch, and perhaps others, the lecturer found himself unable to say, with any degree of certainty, the general composition of this liquid. The following was given as perhaps the best average for mixed saliva:—

Water	990.0
Ptyalin	2.5
Albumen	1.5
Mucus	2.0
Soda	0.8
Phosph. and chlor. of alk.	2.5
Sulphocyanide of alkali	0.1
Lime, sulphates, fat, &c.	0.6
	1000.0

In the normal condition, the saliva is slightly alkaline, as may be tested by reddened litmus paper, or yellow turmeric, which are

changed in colour by it. This is due, according to some, to carbonate of soda—according to others, to an alkaline phosphate. In any case, such saliva cannot injure the teeth; but in long fasting, in dyspepsia, inflammatory affections of the stomach, rheumatism, &c., it becomes acid, and though very slightly so, it must, by its constantly bathing the teeth, dissolve more or less of their calcareous substance; and though this may not generally be the primary cause of caries, it cannot fail to accelerate that action. Food containing much vinegar, or other acids, must also attack the teeth; indeed, a tooth was exhibited which had been partially dissolved by acetic acid. Strongly acid medicines are detrimental in the same way; and the use of acid dentifrices cannot be too strongly deprecated. The formation of "tartar" was said to be connected with the saliva: it is very various in composition, consisting mainly of earthy phosphates held together by animal matter. Some calculi taken from the parotid gland were exhibited; they consisted of carbonate and phosphate of lime, with organic substance.

Dr. Gladstone then proceeded to explain the chemical questions that arise in the treatment of diseases of the teeth. If by decay or fracture the nerve be exposed, it may be burnt, or may be destroyed by powerful chemical agents. Creosote, tannin, tincture of galls, nitric acid, chloride of zinc, salts of cobalt, and other substances, are used for this purpose. Their action was explained and demonstrated by taking the clear white of a fresh egg, which bears a chemical analogy to the albuminous substances that constitute the nerve, and acting upon it by nitric acid, or creosote, whereby it was coagulated just as though it had been boiled. In this way also these chemical agents coagulate, and destroy the integrity of the nerve.

Lecture 2.

The lecturer commenced by stating, that the deleterious effect of a weak or debilitated stomach, or of an acid character of food, on the teeth, which he had inferred on *a priori* grounds, he had since found to be confirmed by experience, and to be recognised by the profession. He warned dentists against the too abundant use of escharotics, as these powerful agents, while destroying the nerve, have more or less effect on other parts of the tooth. He proceeded to describe the different kinds of stopping which have been employed to fill up cavities in the teeth. It might be naturally supposed, that a

substance closely resembling in chemical composition the mineral matter of the tooth, would be best; and accordingly D'Ostermeyer's cement had been devised, consisting of thirteen parts of pure caustic lime, and twelve parts of anhydrous phosphoric acid, mixed together and inserted in the cavity, where they combine to a hard mass. There are, however, great practical difficulties in the use of this; and such earthy stoppings (including the terro-metallic cement, three parts sulphate of lime, and one part peroxide of iron) are apt to fall out. Another idea is acted upon; resins are softened by spirit, and forced into the hole. These serve very well for temporary stoppings, but generally become loose, and of course want entirely the hardness and strength of the original teeth. Gutta percha has lately been found well adapted for this purpose.

A widely different method of stopping, however, is adopted by preference. Metals are employed. The proper solvent for these substances are other metals in a fluid condition, for instance, mercury, or quicksilver. Mercury has also the property of forming alloys with many metals, called amalgams, the physical characters of which were demonstrated by the ammoniacal amalgum. The quicksilver combining with the ammonium swelled to perhaps thirty times its original bulk, and became semi-solid and plastic. In dentistry an amalgam of silver and mercury is much used. The main objection to it arises from the injurious physiological properties of mercury. Softness is a desideratum in metals to enable them to be compressed into every part of the cavity; and this property is possessed to a great extent by some metals, such as potassium. The softest metal, however, which can be actually used, is lead; it is also a cheap metal; but it forms a bad stopping, for it soon becomes covered with a film of oxide, which dissolves in an alkaline liquid, like the saliva, as was shewn by experiment, and the taking of small quantities of lead into the system will, in time, produce the fearful disease termed colica pictorum. Lead, also, as was experimentally demonstrated, is blackened by sulphuretted hydrogen, and by those organic principles containing sulphur which form a large portion of our food. Gold is unquestionably the best material for the stopping of teeth under ordinary circumstances. It is a metal of spec. grav. 19.3, fusing at 2016° F., ductile, and so very malleable, that gold leaf may be made of only one two-hundred-thousandth of an inch in thickness; but what pre-eminently fits it for use in the mouth is its great durability, and the fact that it is unaffected by air or water, single

acids, alkalies, or sulphuretted hydrogen. For stopping teeth it should be pure, but for general dental purposes, it should be alloyed, not with copper, but with silver. Platinum—a white metal—closely resembles gold in most respects; it is less easily fused, has a spec. grav. of 21.5, is nearly as malleable, and is equally unaffected by such chemical agents as may find their way into the mouth. Palladium closely resembles platinum, and has been much used, but its price has greatly risen of late. Silver has a spec. grav. of 10.5, fuses at 1873°, is extremely ductile and malleable, and is unaffected by air or water. It is rather more easily attacked by other substances than gold is, but its chief disadvantage in the mouth is, that its beautiful white colour is gradually changed to perfect blackness by the sulphur compounds in the food. Tin has the same advantages as gold or platinum, but in an inferior degree. Cadmium, another white metal, harder than tin, of spec. grav. 8.7, fusing at 442° and very malleable, has been used with some success. When aluminium, the white metal, of only 2.6 spec. grav., derived from clay, was lately produced in quantity, it was expected that it would prove valuable in the stopping of teeth; but though malleable and unaffected by acids, it is easily attacked by alkalies, and therefore by the saliva. Fusible alloys of bismuth, lead, and tin, have been recommended for stopping; but they can only be fused and put into the tooth at a temperature just under that of boiling water, and they have all the disadvantages of lead. There is an objection in many cases to metallic stoppings, arising from the easy conduction of heat or cold to the exposed nerve; but this may be obviated by interposing between the metal and the nerve, asbestos, horn, or some other non-conductor.

Dr. Gladstone then proceeded to describe rapidly the manufacture of artificial teeth. They are sometimes cut from the tusks of the hippopotamus, or the walrus; but in such a case, it must be remembered that the ivory is dead, and hence decomposition and blackening of the animal portion of the artificial tooth gradually ensues. Mineral teeth are made in very nearly the same way as porcelain, but they are not so brittle as that article. The materials employed in their manufacture are felspar, kaolin (decomposed felspar), some kinds of clay, silica (flint or quartz), and sometimes glass and borax; and for colouring—compounds of platinum, gold, manganese, cobalt, titanium, uranium, zinc, and silver. The processes of moulding the teeth, baking them so as to form a kind of biscuit ware, putting on the enamel, firing them in a muffle furnace, and annealing, were briefly

recapitulated; the formation of mineral or ivory blocks, and of gold plates, was glanced at; as well as the materials used in modelling, viz., wax, plaster of Paris, metallic alloys (zinc, bismuth, and tin), and lead.

The lecturer explained that he had not time to enter upon mechanical details, nor yet upon many principles of natural philosophy that were of high interest to the dentist; nor had he been able to speak of chloroform, morphia, quinine, or other articles of materia medica, in this rapid introduction to chemistry in its applications to dental science and art.

THE COLLEGE OF DENTISTS OF ENGLAND

ITS ORIGIN AND DEVELOPMENT.

Continued from page 145.

This meeting of the Profession, both publicly convened and pleasantly carried out, was a grateful stimulus to exertion on the part of the Committee entrusted with the revision of the rules, and the further organization of the entire scheme. The feeling that they had been in actual contact with the expressed wishes of many of their brother practitioners—that those wishes had been expressed in an unmistakably friendly manner, and moreover with an amount of confidence in them (the committee) as their executive for the time being—rendered the office they had been requested to fill, one of much more pleasantness than the most sanguine among them at the outset believed it would prove. Up to the time of this meeting, they had indefatigably exerted themselves to lay before the profession a code of suggestions as plain as they were practical, and they had seen that these passed the ordeal of conflicting opinions with a very large share of success; for, although not altogether perfect, they had proved trustworthy guides to a clearer decision, and therefore were of the utmost value.

This was an achievement of which they could well afford to be proud, the subject, the material, and the opposing element without being what it was; and accordingly, with the full persuasion that the result of their future deliberations would be received with the same amount of earnest good faith that they themselves resolved to keep in

the matter, these gentlemen reassembled for business on the 20th of the same month.

Carefully to go over the objectionable portions of the rules was of course the first matter, and this demanded a large amount of patience, for each alteration as it was introduced, brought about long, and sometimes very wearisome discussions. The Committee felt that every step they then took must be of greater importance than the preceding one—the higher the finish they desired to give, so much the more care was involved in the process; and it became in every way expedient that the next report should be one capable of unanimous adoption.

Knowing, moreover, that a Society had been and still was in the field, strengthened with names of professional notoriety, with the intention of disarming, and if possible defeating the present movement, the Committee could not help feeling an augmented interest in, and a deeper anxiety for their own success. Night after night did they convene with an amount of earnestness well worthy the cause in which they were engaged, and frequently their deliberations extended to midnight.

The Committee deeming it not only expedient but just to the Assistants of Dental Practitioners, to offer as much opportunity as possible for the enjoyment of those privileges the Institution would be able to confer, issued a circular explaining the precise position those gentlemen would hold, should they enrol themselves as Associate Members. This circular, it is believed, was well received by the large majority of those to whom it was sent; for it set at rest the idea which had more than once manifested itself, that these gentlemen would be considered as holding inferior positions in the Society, and treated accordingly.

Here indeed was a movement, the *liberality* of which has since been censured, but which those who have watched the working of the entire scheme have never felt called upon to regret. When the Committee's intentions touching Associate Members became known, opinions in some quarters were given as to the advisability of not too freely introducing the democratic element, lest it should impede the consistent progress of the Institution. Up to the present, however, these opinions have not been verified. Whether this peculiar element has ever existed it is well to doubt; certain it is that no Member or Associate who may have entertained the views in question, has been

so unwise as to give the same an undue preponderance. "Why should they?" it may be asked.

The important question of the rights and privileges of Associate Members having been agreed to by the Committee, and unanimously pronounced a step in the right direction by them, the many other subjects left for their consideration were consecutively discussed. Perhaps the most important was the name or rather designation by which this movement should be made known to the profession, and the public alike. The settlement of this matter provoked considerable discussion. Originally it was determined that there should be a Dental Society; then again the pretensions of this agitation ramified sufficiently to call forth the title of an Institute; and so it was very nearly arranged that we should have a British Institute of Dental Science. Opinions from all sides were tendered, and the Committee received very many letters on the subject of the "Name." Upon further consideration, however, it became evident that the movement was pre-eminently *an educational one*; that the first idea of its founder had become somewhat misty and dim in the brighter light of its now gradually augmenting importance; and with the full desire and steady aim which the Committee had of making this structure worthy of the Profession's acceptance, by its own intrinsic merits, and, feeling as they did that nothing short of what would elevate and improve the Dentist was worth the trouble of starting, they one and all resolved that a Dental College alone would satisfy their desires. Upon the question being put it was unanimously agreed that the title which they should recommend for adoption by the Profession, be "The College of Dentists of England."

Thus much accomplished, the laws were adjusted and made to coincide with the proposed appellation. It being necessary that the consent of those gentlemen who might be proposed by the Committee to fill the offices of President, Vice-Presidents, Council, &c. should be obtained, prior to their being submitted for election at the General Meeting of the Profession, it was resolved, that the following should be communicated with, either personally or by letter; viz. as Vice-Presidents, Messrs. Merryweather, Normansell, A. Clark, P. Clark, C. Clendon, J. Robinson, Warren, N. King (Exeter), T. G. Palmer (Cheltenham), S. Tibbs (Cheltenham), S. L. Oxley (Leeds), Woodcock (Norwich), R. Reed (Edinburgh). As Council, Messrs. R. Hepburn, D. Mackenzie, Mitchell, Lintott, Underwood, W. Perkins, W. F. Rogers, C. Rogers, Rymer, Vasey, Gray, Waite, Winter-

bottom, Imrie, sen., H. L. Jacob (Bridgewater), Murphy (Derby). Honorary Secretary, Mr. A. Hill. Honorary Librarian and Curator, Mr. C. J. Fox. Letters were therefore addressed to the Country Practitioners, Mr. Hill undertaking to visit those who resided in town.

This was an anxious time for the Committee, as they earnestly hoped to be able to go before their professional brethren with a list of names of that importance which they required to give solidity and strength to their enterprise, and become a guarantee for the *modus operandi* they hoped to see pursued. To ensure the acquiescence of these gentlemen was a step essentially necessary to them, as the lesson they had received on the occasion of the first meeting of the Profession, was by no means one of the things so much of the past as to be overlooked. On that occasion their inadvertence gave offence; they therefore determined to avoid the fatal rock now.

About this time the Committee felt that Mr. A. Thomson would be an acquisition to them in their deliberations, and that gentleman was solicited to become one of their number, in which he acquiesced.

On the next meeting of the Committee, Mr. Hill announced, as the result of his canvass, that *only two* gentlemen (Messrs. Merryweather and Lintott) had consented to act; and that he had had considerable difficulty in overruling their objections. The remaining lists of names were announced as "undecided," the consequence being, that Mr. Hill was requested to visit these gentlemen a second time. Messrs. Warren and P. Matthews were suggested as additions to the list of Council; and it was further decided, that these two gentlemen be requested to act in that capacity.

Whilst the Committee were waiting for replies from the country practitioners, their time was occupied in deliberating upon the most appropriate locality where they might raise the standard of dental reform, by occupying a suite of rooms such as would be required to commence proceedings, after the next general meeting had decided upon those whom they would have to regulate and conduct their affairs for the first eventful year. Many were the suggestions made, and not a few offers presented themselves; but time wore on, and matters of more immediate importance were at hand, which demanded prompt and energetic action, so that although very desirous of being in a position to offer an eligible position for the Council's final and future decision, the Committee were compelled to allow this matter to take a secondary and subordinate place in their deliberations.

On the next meeting of the Committee it was announced that

Mr. Palmer, of Cheltenham, declined all connection with the movement; but Messrs. Oxley (Leeds), N. King (Exeter), S. Tibbs (Cheltenham), H. L. Jacob (Bridgewater), R. Reid (Edinburgh), and others, had written, expressing their willingness to act in the capacity assigned by the Committee, if elected at the ensuing general meeting.

Thus then matters looked more encouraging; the list of Vice-Presidents and Council gradually filled up, and the Committee felt that there was every hope of having a goodly array of names to propose for the acceptance of those who might assemble. Next came the principal and very important matter of the office of President.

So much real difficulty had been experienced in obtaining the consent of the parties who had, up to the present signified their readiness to take the various offices assigned to them (conditionally) by the Committee, that very grave doubts were entertained as to the result of the canvass for the Presidency.

The Committee could not help feeling the force and weight of the several reasons that had been assigned for the refusals they had received, and hence the more conspicuous office now demanding a man of notoriety to fill it, was a matter of very great anxiety (from the sheer nature of the case) to them. Knowing the marked position, the peculiarly prominent place any gentleman who would stand for President would occupy, it was a matter of some difficulty to decide upon a fitting person.

After long and mature deliberation, the Committee determined to venture the question with Mr. Robinson, as an old and respected member of the profession. Mr. Hill was deputed to wait upon that gentleman, and request his assent to their proposal. Accordingly Mr. Hill did so, and was received with every mark of attention and respect; but the wish of the Committee was so thoroughly unexpected by Mr. Robinson, that he could not give any reply at the moment. Many and cogent reasons were adduced by Mr. Hill in favour of the Committee's proposal, which in their turn were as skilfully parried, and one after the other declined, with a great amount of validity. Above an hour was thus occupied in strong argument, *pro* and *con*; but Mr. Robinson's reasons were so many and forcible against the proposal, that Mr. Hill was at length compelled to acknowledge his defeat.

And here it may not be inappropriate to remind the Members of the College of Dentists of England, that this request was not by any means such as a gentleman in Mr. Robinson's posi-

tion need care very much in granting. The rancorous jealousy of the profession had been "a tale oft told," and now had shown its grim reality in the unhappy division of itself into two distinct, and moreover distant sections. Pride had not been dead or dormant, but with much effect had, on the contrary, shown how implacable it could be. The high barrier which in England exists between the employer and the employed, seemed raised higher at this moment than it had ever been before; and that unmistakable distinction existing between the man of large practice and the man of comparatively small practice, appeared as a huge gulf which might not be passed.

These disaffections, to say nothing of the many of minor importance, which may be expected to hamper any other profession, as well as that of dentistry, were quite enough in themselves to deter a person from coming forward to be made the object of unkind, nay, of untruthful remarks; and therefore it was not to be wondered at, that a gentleman in Mr. Robinson's position would rather remain as a mere spectator, than occupy a most unenviable position, as at that moment it was.

Nevertheless, it is not only just, but absolutely true, to record here the fact, that Mr. Robinson, so far from studying himself, gave Mr. Hill the promise, that although refusing there and then to act as President, yet he considered it but justice to the Committee calmly to contemplate their request, and with the desire that Mr. Hill should call upon him the next day, the matter rested.

At the appointed hour Mr. Hill was granted the interview, which was to decide the question of Mr. Robinson's willingness to allow himself to be nominated as President of the embryo College of Dentists. To say that his determination to accede to the Committee's request had been made, would be to speak without regard to truth; for the bias was evidently the other way, and very faint were the hopes that the desired end would be obtained.

Argument, however, wrought out a change in Mr. Robinson's views; and reflecting upon the state of the profession, and firmly believing that this movement was, like the first streak of morning, the beginning of brighter and better things, he gave his consent to the proposal, and allowed Mr. Hill to place his name at the head of the list of office bearers.

These facts prove the injustice of the remarks which have been made, touching Mr. Robinson's readiness to accept the President's chair of the College of Dentists of England. Envy and ill-will are

guilty of many absurd and unkind assertions; but the thorough-heartedness of Mr. Robinson's endeavours in his office, the unflagging zeal he has manifested in the cause of the profession's redemption, and his *many* acts of disinterestedness and personal self-denial, are so many buttresses against the underhanded attacks of those who would misrepresent him; and to all such, as well as to those who have been led into unfavourable conclusions with regard to the President of the College, we would say—

"Audi alteram partem."

Where no other gentleman of equal position would venture, Mr. Robinson has *stood*, and maintained the rights and privileges of the less fortunate in the profession; and, further, has lent his time, his energy, and influence, to better their condition; therefore, should no one else think of this, let the Members of the College of Dentists of England be the last to forget it; for it is a fact, the importance of which is already palpable in no small degree.

Everything now was gradually assuming a more satisfactory appearance—the list of Vice-Presidents and Council was complete—Mr. P. Matthews kindly offered to become Treasurer, if elected; and, with Mr. Rymer and Mr. Hill as Secretaries, and Mr. Fox as Librarian and Curator, the Committee felt pleasure in anticipating the forthcoming Meeting.

It was determined that only those who, in reply to a circular which had been forwarded them, had sent in their adhesion to the cause, should be present, as this was to be a Meeting of Dentists who had determined to organize an Institution, with certain laws for its guidance, and by which laws each person had signified his intention to be bound. To these, then, cards of admission were forwarded, and their attendance requested on the evening of the 16th December. A Meeting of the Committee was convened one week previously, to make all preliminary arrangements; and as the Freemasons' Tavern was considered both central and convenient, it was arranged that there the Meeting should be holden.

Mr. D. Mackenzie occupied the chair on the evening in question, and the room was well filled with gentlemen, evincing, by their presence, the interest they felt in the matter. Large sheets of paper had been placed in a committee-room below, whereon was printed a short form of declaration, the signing of which implied the writer's willingness to submit to such laws as should be passed by the majority

present; and these papers were tolerably written over before the Meeting commenced. The Chairman opened the Meeting with a suitable address. The laws were then proposed *seriatim*, and passed; and it was then determined, that, as a whole, they should form the laws by which the College of Dentists of England should be regulated.

The next proceeding was to elect officers, in which, all who were qualified by the now recognised laws of the College were invited to take part. Some time was taken up at this part of the proceedings by the payment of subscriptions, and the long table at the end of the room soon became crowded with gentlemen desirous of fulfilling this portion of their engagements.

The ballot was then announced as about to take place, which in due form was proceeded with, the result being, that the following gentlemen were duly elected to serve as the officers for the first year; viz.—

PRESIDENT.

JAMES ROBINSON, Esq.

VICE-PRESIDENTS.

A. CLARK, Esq. (London)
S. CORBETT, Esq. (Dublin)
F. B. IMLACH, Esq. (Edinburgh)
N. KING, Esq. (Exeter)
J. L. OXLEY, Esq. (Leeds)
R. REID, Esq. (Edinburgh)
F. H. THOMSON, Esq. (Glasgow)
S. TIBBS, Esq. (Cheltenham)

COUNCIL.

W. CRAMPTEN, Esq. (London)
W. L. CANTON, Esq. („)
J. HARLEY, Esq. („)
R. HEPBURN, Esq. („)
W. HUNT, Esq. (Yeovil)
H. L. JACOB, Esq. (Bridgewater)
W. H. LINTOTT, Esq. (London)
D. MACKENZIE, Esq. (London)
J. MERRYWEATHER, Esq. („)
J. W. MITCHELL, Esq. („)
J. B. MURPHY, Esq. (Derby)
W. PERKINS, Esq. (London)
C. ROGERS, Esq. („)
A. THOMSON, Esq. („)
T. UNDERWOOD, Esq. (London)

TREASURER.

P. MATTHEWS, Esq. (London)

HON. SECRETARIES.

S. L. RYMER, Esq. (Croydon) | A. HILL, Esq. (London)

LIBRARY AND MUSEUM.

C. J. FOX, Esq. (London)

Long and loud cheers followed this statement, and the Meeting broke up with a strong feeling of satisfaction at the result so triumphantly accomplished. From that night the Dentists of England could point to a publicly and fairly constituted College, which according to the support it was to receive, was destined to wipe out the stain of incompetence from the profession. Its laws were founded in impartiality and liberality; its development henceforward was to be of that steady character which does not need either undoing or repeating; and under the shelter of this Institution the young student might come and be tutored in his avocation, and at the end of his studies go forth as well versed in his profession as his own and the public interests demanded. This was a great day for the dental profession, and the Provisional Committee retired from their duties with considerable pride, and a very large share of praise.

Thus it has been shown that dental reform was not one of those utterly impossible things so many said it was; and more than this, it has been fully proved that many of the leading men in the profession either *could* not or *would* not effect it.

The attainment of this important design teaches a forcible lesson, and adds another instance to the many already so well-known, of the uselessness of hoping for a revolution to proceed through the great ones of the community.

The working out of the College to the present time, practically illustrates that such men do not *see* the necessity of alteration, because they do not *feel* it. The homely saying of "where the shoe pinches," is applicable here. The great end that has been gained has been *essentially* the work of a few energetic men, who, so long as they had the countenance and moral support of others in like positions with themselves, determined to give their time, their energy, and what else they had to spare, for the general good. These are just the ones who will not allow themselves to be outstripped in so good a cause; and will not only deserve, but receive the genuine and hearty thanks of their brother practitioners, when the present magnates of the profession are gathered to their fathers.

"PERSEVERANTIA PRÆVALEBIT."

DENTAL SURGERY AND MECHANICS.

PROSOPALGIA—TIC DOLOREUX.

By James B. Dixon, D.D.S.

Faceach, or facial neuralgia, is perhaps one of the most painful affections to which the body is liable, both from the violence of the paroxysms, and their frequent periodic occurrence. The pains are of a plunging, darting, digging, twitching character, and occur as if the face under the eye, in front of the ear, over the forehead, and down the neck, and to the root of the tongue, were suddenly struck; and the remission to ease is as sudden, leaving the part as free from pain as if the paroxysm had never occurred, until within perhaps a few minutes before the same tragic suffering is to be again endured, till replaced by sudden tranquillity. These fits of torture are of longer or shorter duration, sometimes finishing in an hour, at other times lasting weeks and months, with only occasional remissions.

The cause of this affection is not satisfactorily clear. Its exact origin is as yet obscure. Sometimes it is attributed to a diseased growth of bone in different parts of the head and face, especially about the canals through which the nerves pass; at other times it is attributed to irritation excited by foreign bodies acting upon some of the dental branches; it is also attributed to a constitutional cause, such as derangement of the general health; it is also supposed to depend upon an inflammatory state of some portion of the nervous system; and again it is attributed to some affection of the teeth, and morbid condition of the gums and mouth. Damp and cold are specified as exciting causes—damp combined with malaria such as produces ague, exposure to currents of cold air, especially if the body is overheated; debility of constitution, anxiety of mind, temporary stomach disorders, such as superabundant acid, are all put down as originators of this painful disease. It is therefore perfectly clear that it must spring from a variety of causes, or else, that information as to its origin is indefinite and unsatisfactory, and its actual cause is obscure. The observations of Dr. Togg, in that valuable paper on "Odontalgia," as quoted in your Journal of July, do not add more positive information. He refers to a fibro-cartilaginous condition of the gasserian ganglion and its enlargement, but dissection does not

confirm this as a general cause; hence its existence was only an additional condition of disease.

In neuralgia there does not appear to be constant lesion of the solids, nor evident alteration of the fluids, and hence the disease is supposed to be one of nervous influence; and as dissection affords no diagnostic results, not even so much as a diseased condition of the affected nerve, it is highly probable that this opinion is correct, and that it results from electrical influences, like the flashes of lightning disturbing the equilibrium of nature. Whether nervous fluid be identical to electric fluid, or whether it be subject only to kindred currents, may be matters of speculation; but it is highly probable that the paroxysms of tic are disturbances in the ordinary current of nervous fluid.

In the treatment of this dreadful affection the dentist is frequently consulted, and perhaps such cases lie more rationally within the province of his practice. It cannot however be inconsistent, under any circumstances, to afford relief in pain, for it is but the development of the social principle to render assistance in cases of necessity.

The remedies prescribed are various and manifold. Change of climate, dependent upon circumstances, such as the situation and temperature where the disease commenced; change either to a warm dry air, or *vice versa*, to a moist, humid, warm atmosphere. A course of medicines for indigestion—after that, tonics—such as quinine, carbonate of iron, carbonate of soda, &c., blisters behind the ear, and at the back of the neck. The late Sir Charles Bell recommended a drastic aperient pill, composed of croton oil and compound extract of colocynth, and an antispasmodic, the compound galbanum pill. A piece of sponge, or flannel, dipped in boiling water, and applied, has also been advised. Opium internally and externally administered. Chloroform applied over the affected part. Galvanism, electricity, and the surgical operation of the division of the nerve, are also recommended.

Such is the catalogue of remedies, as directed by medical writers, for the removal of this terrific disease. Occasionally, one or other of them succeeds, but unfortunately, in too many instances, no satisfactory result follows. The whole string of remedies sometimes fails even in affording only temporary relief. In a special case, which came under my own treatment and observation, I had ample opportunity of testing the value of the accredited remedies, and I must confess the result was highly dissatisfactory. My father, the Rev. M. C. D——, ætat 71, became a sufferer under an attack of tic

about two years ago. He took quinine, carbonate of iron, aperients, arsenic, &c., without relief. I consulted with an eminent M.D. and he prescribed bebearine, but with no better success. After a three months' course, the disease disappeared, and the conclusion to which I came was, that the medicines were valueless in the attack. Six months afterwards, the paroxysms returned, and continued in defiance of remedies for about a month. He was at that time in Lowestoft, and had the advice of two medical practitioners, who prescribed for him. Towards the end of last year, the tic again recurred, and continued for about two months. He was then in Manchester, and was under the advice of an eminent surgeon. In May of this year, whilst at my house, the same affliction returned. He took, under my direction, quinine, carbonate of iron. I applied a chloroform liniment to the face, and was astounded at the paroxysm actually recurring during the application. Tincture of opium was also rubbed on the painful part, and applied to the ear on cotton wool. Supposing the strokes to originate in the mouth, from some carious roots, I advised their removal, and took out five one day, and three the day following, but no relief was obtained. I then applied to a friend of mine, who professed great faith in Homœopathy, and he advised me to give one globule of belladonna, and of bryonia, alternately, every half-hour, and the cure was effected within twenty-four hours. This was indeed, a highly satisfactory result, and in the hope of obtaining some data for the origination of this complaint, I investigated the specific action of these drugs, with the following results. Belladonna (deadly nightshade). From experiments made with this drug upon animals of different species, we have various results. Goats, rabbits, &c., which live on vegetable diet, are almost innocuous to the action of belladonna, and can eat it with impunity; whilst carnivorous animals, such as dogs, cats, &c. are more sensitive to its action; and the conclusion derived from this fact is this drug is more pernicious to carnivorous, than to herbivorous animals. The therapeutic problem derived from this fact is, that the specific action of belladonna is in exact ratio to the development and functional activity of the brain upon which this poison produces direct effect, and man of all animals is most susceptible of its action; and experiment has established this further fact, that those are most powerfully affected, whose cerebral faculties are most liable to become irritated by particular causes, or whose brains have the most complete development, for idiots appear to be protected from the deleterious action

of belladonna, and can eat it with the same impunity as animals of an inferior order. In applying these observations to neuralgia, we should infer that the disease was connected with cerebral excitement, whilst the *location* of the development, was the result of specific action, or local irritation, so that it would lead to the same conclusion we have already premised as the cause of facial neuralgia, that of nervous irritation, and disturbance in the current of nervous fluid. A strong infusion of coffee, is an antidote for belladonna, and consequently not suitable for persons afflicted with tic.

Bryonia (white bryony), is found to act upon the muscles, and especially upon fibrous tissues, which would lead to the conclusion, that the current of nervous fluid was impeded, or disturbed by muscular or fibrous contraction where the paroxysms occur.

I have tried the tincture of belladonna, and tincture of bryonia, in three other cases with the same marked success, the relief being in every case almost instantaneous.

High Street, Hanley, Staffordshire.

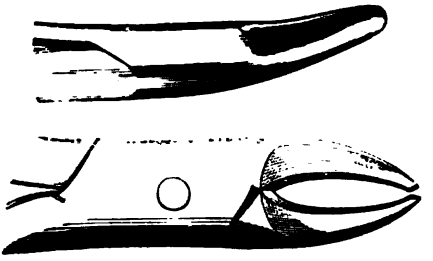
THE ADAPTED FORCEPS, BY J. ROBINSON, ESQ.

(Continued from Page 158.)

The following engraving represents one of those accidents which occasionally occur, in consequence of the careless employment of the forceps, in which, either from using too large an instrument, and taking hold of the alveolar process, or from embracing two of the teeth at the same time, a considerable piece of the alveolar process has been torn away.

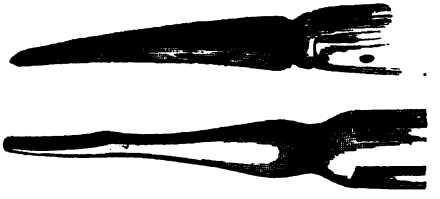
For the removal of single stumps in either jaw, the forceps should be well grooved, and tapering to one edge, until within a few lines

at their points, to allow of their being pressed down between the gums and the fangs of the tooth. Those used for the upper jaw should be straight or curved, as in the subjoined cut.



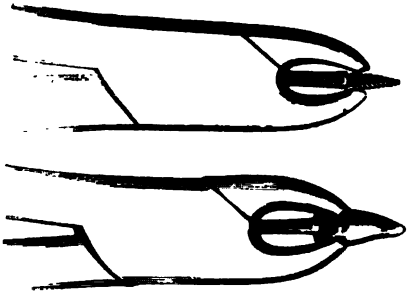
For the lower jaw the forceps should be curved, some at right angles, and the others nearly so.

In the case of stumps deeply seated in the back of the jaw, whether such stumps have been the result of disease, or remain after the improper or unsuccessful use of the key or forceps, admirable instruments called elevators have been invented—they should be slightly curved, strong in the blade, and well tempered to prevent bending or breaking. The first of the following engravings represents one employed for the back of the lower jaw, the other for the sides of the upper jaw. However, where the stump forceps can be used for the removal of roots, they should be preferred.



The six front teeth in the upper jaw are sometimes so completely hollowed out by caries, as to render the success of an operation for

their removal extremely doubtful, on account of the thinness of the outer walls, by which they are rendered incapable of bearing the pressure of either the forceps or the elevator. Formerly, it was the practice to render the stump solid, by shaping a piece of wood to the size and length of the hollow, and then applying the forceps. For these otherwise forlorn cases, an admirable instrument has been invented by the late Dr. S. P. Hullihen, of the United States, which contains the advantages of the screw and forceps. In describing this ingenious invention, the doctor says:—"Lengthwise, within and between the blades of the beak, is a steel tube, one end of which is open, the other solid and flat, and jointed in a mortice in the small part of the joint of the forceps. When the forceps are opened, the joint permits the tube to fall backwards and forwards from one blade of the beak to the other, with lateral motion. Within this tube is a spiral spring, which forces up a shaft two-thirds of the tube; the other part is a well-tapered conical screw. The screw and tube are so fitted together to the beak of the forceps, that one-half of the rounded part of the shaft projects beyond the end of the tube, so that the shaft may play up and down upon the spring about half an inch, and the screw or shaft be embraced between the blades of the beak of the instrument.



The manner of using this instrument is by first grasping the upper extremity of the screw between the blades of the forceps, and gently turning the handle of the instrument so as to drive the screw into the root of the tooth as far up as possible. The blades of the forceps are now opened, and pushed forward on the fang, which is grasped and extracted in the usual manner.

On the advantages which this instrument has over every other for these particular cases, Dr. Hullihen observes:—"It prevents the

root from being crushed; it acts as a powerful lever when a lateral motion is given: it is likewise of service when a rotary motion is given: it prevents the forceps from slipping, or the action being lost, should even one side of the root give way in the act of extracting it; and it is used with equal advantage when one root is entirely gone."

In my practice, I have had many opportunities of testing the merits of this invention, and I can safely affirm that it is one of the most valuable auxiliaries to the scientific practice of dental surgery that has ever been introduced.

Dr. W. H. Elliot, an able practitioner, has also invented a clever instrument for removing fangs of teeth by means of a screw, which is inserted into an universal joint upon the end of the instrument. This instrument may, it is said, be applied with equal facility to the fangs of the molars, or to those of the front teeth.

For the removal of bicuspid stumps in the upper jaw, we have found the straight narrow-beaked forceps used for the deciduous centrals best adapted.

Caries will frequently extend and destroy the entire crown of the upper molars down to the edge of the gum. To meet these cases, I have constructed two pairs of forceps, for right and left sides. In these forceps, instead of the point of the outer blade terminating a few lines beyond the grooves, as in ordinary molar forceps, it is carried forwards and inwards, ending in a cutting-edge point, a few lines down this projecting spine, the object of this being to cut the alveolus between the external fangs, high up, whilst the inner blade rests upon the alveolus, and embraces the palatine fang. The operator, by this instrument, obtains a firm grasp, and is enabled to remove these stumps without difficulty, when separated by caries.

Dr. Maynard, of America, has also invented an instrument for the same purpose, on which, instead of the ordinary blade, a kind of conical hook, terminating in a point, is used for perforating the alveolus between the outer fangs. I, however, prefer my own in practice, as it gives the operator a firm hold, by means of the grooves in the blades around the outer fangs, while in Dr. Maynard's, the points of contact are only between and at their bifurcation.

In describing the manner in which the instrument for the extraction of teeth, in this paper, should be used, I may here observe, that my instructions are given to pupils, not to the *initiated;* that the mechanical motions are very similar for all the teeth.

I shall therefore select a pair of straight forceps for the removal of the *incisors* in the *upper jaw*, taking care that the instrument is sufficiently wide in the beak to clear the crown, but only so wide as to embrace the neck of the tooth, and as far as the alveolar process, or a serious loss of that bone may result from the operation. If the crown only be grasped, the tooth will, in all probability, be crushed by the pressure employed. Having grasped the tooth, alternate lateral, with slight rotary motions, are given in quick succession, until the tooth yields, when a slight downward action will easily remove it.

Provided the tooth be much decayed and hollowed out in the centre, the pupil, if he uses the straight forceps, should run the point well up under the gum, and employ only sufficient pressure to prevent the instrument from slipping: or if he is provided with a pair of screw forceps, he can frequently use them with advantage in these cases.

Presuming the pupil is not in possession of a pair of Hullihen's screw forceps, he should have recourse to the wooden plug previously referred to. An occasional failure in these cases must be expected, and the pupil must not be disheartened, for the very best dental practitioners have occasionally failed in extracting the fang of a tooth under similar circumstances. For the removal of the cuspidates in the upper jaw, the same alternate lateral and downward motions are necessary, but with a *much less* rotary action. These teeth usually require a much greater amount of physical force in combination with the mechanical to remove them from their sockets; and occasionally are flattened, and curved at the apex of their fangs; and this portion is very liable to be fractured, and left in the sockets. To extract the remaining portion is a very difficult operation, and can only be effected by cutting through the external wall of the alveolar

process, and removing the fractured part, either by a small elevator, or finely-pointed stump forceps.

The bicuspids in ordinary cases are readily extracted, and require merely the alternate and lateral movements, tending to the perpendicular. In those where caries has undermined and destroyed the greater part of the dentine of the crown, leaving in many cases nothing but mere walls of enamel, the points of the forceps should be forced well up to the edge of the alveolar process.

In other cases again, in these teeth caries will frequently undermine the enamel, and continue its course a considerable distance up the centre of the fang, and from some mechanical injury the whole crown is suddenly broken down, or in others only half the crown may be fractured. In either case the ordinary application of the forceps would render the remaining portion liable to fracture. To make the operation of extraction more certain in such instances, it is necessary to separate the gum freely with a lancet, both externally and internally; the beaks of the forceps should be run high up, and embrace both edges of the alveolar process. A firm and decided pressure should now be made, so as to grip the fang, which should be instantly followed by the usual mechanical movements. After extraction, the pupil, upon examination, will frequently find small pieces of loose alveolar process remain; these should be removed with his bone forceps; he will also find in some of the more difficult of those cases, that exfoliation of small portions of the process, will continue to annoy the patient for some weeks, which may temporarily alarm him; the frequent application of the spongeopiline, steeped in hot water or milk, or the application of a leech to the part, with a dose or two of some mild aperient, will generally be sufficient to reduce all local inflammation, and the loose portions of bone will be exfoliated.

(To be continued.)

A DIGEST OF THE CAUSE OF CARIES OF THE TEETH.

By Donaldson Mackenzie, Esq., Surgeon-Dentist.

At the last ordinary Meeting of the Members of the College of Dentists, I was requested, by a gentleman present, to read the article upon "Decay of the Teeth" in Mr. Lintott's book of 1841. Under

the impression that I had unwittingly, and without permission, been poaching on my friend's preserves, or, in the vernacular, that I had been pilfering an idea, I lost no time in comparing notes, and I hasten to lay before your readers our published views, which will show how far we diverge, or incline in our opinions on this subject; and if this has no other beneficial effect, it may, perhaps, bring forth the experience of others upon this question.

The following are my views as stated in an article, written by me, which appeared in the *Medical Times* and *Gazette* of 28th October 1854:—

Until lately, all authors on this subject have recorded that the teeth are affected by two kinds of caries, which my late friend and employer, Mr. Leonard Koecker, termed internal and external, or superficial, or deep-seated caries. And as we are apt to suppose that terms are significant, we must inquire which of these expresses the true character of the disease, or if any of them deserves to retain a place in dental nomenclature.

As the readers of this article are supposed to be already well versed in the history and anatomical structure of the teeth, a very slight glance at the subject will be sufficient for our purpose.

The ivory of the tooth is the first formed, and is deposited upon, and by the agency of the dental pulp in diverging tubulous layers emanating from the surface of the pulp, towards the outer portion of the tooth ivory, the extreme surface being the first formed; and the process is continued (if we may so express it), by the pulp lessening its own dimensions, until the requisite thickness is acquired, and the cavitas pulpæ of adult age is complete.

The enamel which covers this ivory structure is formed upon a somewhat different plan. It is deposited from the enamel organ within the dental capsule, which surrounds the tooth to its neck. The enamel is first formed upon the points or cusps of the teeth, gradually extending itself to their necks until the necessary thickness be attained; and, it may be observed, it is deposited in minute fibrous laminæ, concentrating their lines from the exterior surface of the enamel, towards the outer surface of the ivory crown of the tooth, and is of a dense crystalline structure. With the completion of this process, the tooth is ready to rise through the gum. In the course of this event, the capsule is carried upwards with the tooth and alveolus, and, from being pressed between the tooth and gum, it becomes absorbed, and the pearly point of the tooth protrudes itself uncovered

in the general order of nature. A curious case once came under my notice, in which the teeth did not come through the gum uncovered. This was the case of a boy, who cut all his teeth (second set) with the dental capsule still covering them. These capsules had much the appearance of thin brown vellum, which I removed, and found the teeth quite perfect.

This case somewhat strengthens the supposition of the late Mr. Alexander Nasmyth, that he had discovered by maceration an enveloping membrane upon the enamel of the human tooth, which he has named the persistent dental capsule.

Although I am not prepared to admit the common presence of this membrane, yet, upon reflection, it would be a vast step toward anatomical knowledge could the fact be established, as it might prove that nature has invested the crystalline portion of the teeth in a membranous protection, less liable to be destroyed by chemical solvents than the enamel itself; it would guide us to a less empirical practice, as well in curative as in sanitary applications.

Yet, however sceptical we may be on this head, experience proves to us that the external surface of the enamel is more dense and less permeable than the sub-structure, which accounts for caries attacking the sides (between the teeth), and may be explained thus: when the teeth are rather closely packed, corrosive matter from the mouth-moisture is deposited, and from the closeness of the teeth, retained there until the outer bark of the enamel is destroyed, which at once opens a path through the pores of the enamel structure to the more easily-destroyed ivory of the tooth*.

Myself and others of the same standing were educated in the belief that the proximate cause of decay was inflammation, and consequent death, of a part of the substance of the tooth; but I found this theory did not reconcile itself to observations made in practice, although supported by Mr. Thomas Bell, who also states that, "The supposition (not an uncommon one), that gangrene may arise from mere external causes acting upon the surface of the tooth must be fallacious," &c. However excellent an anatomist, and correct in his general hypothesis, he cannot have been observant of facts to the contrary, which must have come under his notice from day to day

* This passage might be better elucidated, by supposing that the corrosive matter finds an undisturbed lodgment.

in his immense practice, as I think I shall be able to prove that caries has a common origin, and that it is always external. It will be found that caries is rather partial in its attacks, not only as regards the teeth themselves, but also in reference to the parts of the teeth which are visited, for example:—The lower incisors and canines are rarely the subjects of caries; the superior canines less so than any of the upper teeth; the four anterior molars are very subject to disease, so also the wisdom teeth and the bicuspidati; the superior incisors, when crowded or of a delicate texture, are also subject to disease. It is also to be observed, that the portions of the individual tooth which are seized upon by caries are the sides of the incisors and canines, the side of the bicuspidati, the grinding surface of the molars. In some molar teeth, there is found on the outer surface a natural indentation, which is also frequently found to decay. There may be exceptions to these laws, but I find, where this exists, there is always a specific perceptible cause, as malformation, &c.

Crowded teeth, or lapping of one tooth over the other, has long been regarded as predisposing to caries at their sides, from lateral pressure; and appearance goes far to warrant us in this opinion; but observation proves that the decay does not arise from pressure, but from the too great facility afforded to the lodgment of corroding substances, which destroy the external texture of the enamel, admitting the permeation of fluids to the ivory structure. I generally make longitudinal or lateral sections of decayed teeth which fall in my way, and have always found, in incipient stages, that the decay begins at the external surface of the enamel, and continues in a direct line with the laminæ towards the pulp cavity. In some cases the caries extends laterally upon the surface of the ivory under the enamel, which in a section, gives the decayed portion the appearance of a cross. This method of burrowing upon the bone, and depriving the enamel of its support, is the cause of its breaking down, which has probably given rise to the supposition of internal caries. But I have never found caries in a tooth to which there was not an opening through the enamel.

Having been for a series of years dentist to several boarding schools, it has been my fortune to see a great deal of this practice; and I have been enabled to trace its effects through its every phase and condition.

We have the first stage of decay between the teeth in young people of delicate constitution, exhibited by a minute, almost colour-

less speck of softened enamel, easily removed by the file; but often, from youthful inattention to commands, or carelessness of consequences, the original exciting cause re-collects, and a worse feature of the disease is the result at a future day.

In more robust constitutions, and in adult age, we have indicated a discoloured spot, generally of larger dimensions, also easily removed with a file, and this more enduring in effect; and, as the disease advances, it is found, upon removal of the discolouration, that one or more minute perforations will be found extended into, and often through the enamel, neither of them larger than would admit the point of a fine needle; the enamel between these perforations in progress of time breaks down by disintegration, which forms an opening into the ivory of the tooth, still comparatively small; or we have it assuming an opaque, bluish-coloured ring. This happens when the caries has spread itself upon the surface of the ivory, under the enamel as described above.

The same indications are observed in the bicuspids; and if we fly to the molars for proof, we find them also subject to lateral decay, similar to the incisors or bicuspidati; but more frequently they are attacked upon the masticating surface, in which there exists natural interstices between the cusps, sometimes dipping so deeply into the enamel that their extremities are often without its protection; and in these we generally find caries originate; and as the ivory is the more readily destroyed of the two structures, the mischief goes on unobserved until a paroxysm of toothach, or extensive breaking in of the enamel, gives warning of its progress; and this has, no doubt, been supposed to be internal or deep-seated caries.

It has been supposed by recent dental anatomists, that certain abnormalities in the internal structure of the teeth are predisposing causes of caries. Although I cannot second this opinion, I do accord that, should the exciting cause reach those spots, the entire destruction of the tooth would be sooner accomplished; but I uphold that caries always commences *on*, not *in*, the teeth. From the tubercular structure of the ivory of the tooth, we find we have a curative process set up by nature, under certain circumstances, as when a tooth has been filed or stopped. This effect is similar to the porcelain deposit exhibited upon bone which has been cut or scraped; and it is remarkable, that this deposit is more uniformly observed upon the surface of cavities which have been stopped with the silver amalgam, than those which have been filled with any other substance; which would lead us

to the supposition, that a greater degree of irritation is set up from the presence of the small portion of moisture which is unavoidably left in the cavity, chemically acting upon the amalgam, the probable consequence of the presence of the chlorides of potassium and sodium, which form a component part of the saliva.

It is upon the principle of depending upon this deposit taking place, that we base our operation with the file upon the front teeth and bicuspidati; for, were this curative effort of nature withheld, the dentist's file, from being the most useful instrument in his case, would be most mischievous.

With these remarks, I shall proceed to consider the means of cure, promising the most beneficial result to the patient and credit to the operator. In the beginning of my professional career, I, as a consequence of education, followed the usual mode, namely, stopping when practicable, and filing with the dividing file, when the situation or form of the decayed part precluded the stopping process; but in time I was induced to change my system, as I found that, notwithstanding all possible precaution, unsightly spaces were unavoidably left between the front teeth, caused by the oblique direction given to the dividing file, and also the impossibility of entirely extirpating the decayed portion without reducing the tooth to a mere shadow of its former self, combined with the reflection that I could not with certainty insure the curative effect of the operation.

I, therefore, began gradually to supersede the dividing file by substituting others of a very different construction; and for this purpose I had a hollow handle made, about half-an-inch in diameter, and three inches long, to which I fitted a metallic tube, about the size of a quill, having a binding screw at the side, for the purpose of holding firmly the different sized steel rods. These I procure of sizes graduating from that of the tube to the size of the wire of a hair-pin. I then by means of a hammer and file, form them into little files, similar to riflers, having safe sides, so that an adjoining sound tooth might not be injured in the operation.

(To be continued.)

CHEOPLASTIC PROCESS, by Dr. A. A. Blandy, Baltimore.

I desire to lay before the Profession some of the merits of this recent improvement in Dental Art. I feel assured that every one, who,

without prejudice, investigates it, must acknowledge that in offering a method so simple and so universally practicable, whereby the uncertainty, delay, risk and insecurity, common to the processes in general use are avoided, I have rendered to the profession an important service. A full and fair trial of my process will bear out my assertion, that it is destined to make a great change in the department of Mechanical Dentistry. I claim for the "Cheoplastic* Process" the following advantages:—

1. It secures an absolutely accurate fit to the *plaster cast*, and by consequence to the mouth, where the cast and impression are correctly taken. Mouths of the greatest hardness, irregularity and size are fitted with the same ease, and as perfect certainty as smaller, more even, than softer ones. Pieces thus made do not require time to insure their firm retention; but adhere from their first insertion with a degree of firmness that few swaged plates ever acquire.

2. It consumes much less time than is required by the usual methods. I have made pieces of fourteen teeth with one hour of time spent in actual manipulation. I will undertake to finish the great majority of pieces (excluding, where blocks are made, the time spent in carving and baking them) in from five to eight hours actual manipulation, and should deem from ten to twelve sufficient for the most troublesome case.

3. The cost of the metal composing the plate is much below that used in any other process. An ingot (about a pound Troy), will, allowing for waste, &c. make eight pieces, and may be had of the patentee, or at the principal depots for $4.

4. Repairs or alterations, rendered necessary from accident or mistake, can be expeditiously made with no risk to the piece, and without leaving any trace of such alteration.

5. Single teeth or blocks can be very easily removed from a plate, uninjured, and remounted a second, third, or fourth time. It is unnecessary to specify the cases in which this property, which I regard as altogether peculiar to my process, will prove useful.

6. The instruments required are few and simple, and are in every dentist's laboratory. The materials may be had at any of the depots,

* The Ch pronounced as K, a name derived from the fact that the metallic plate is cast and not swaged.

and a very small outlay will provide sufficient for many cases. No cumbrous, dangerous or expensive apparatus is required; for a spirit lamp and the bake-oven of any cooking stove will supply the requisite heat, unless the dentist is his own block-maker. To a large class of practitioners this will prove an important point in my process.

7. It offers peculiar advantages in many cases of correcting irregularities of the dental arch.

8. The natural conformation of the mouth can be accurately copied on the lingual side of the plate; want of which, in nearly all swaged plates, interferes with the correct articulation of certain words. This, as well as the filling out, in places where there is loss of structure, or where necessary to restore the fulness of the face, can be done with great facility.

9. As no spaces are left for the lodgment of food or the secretions, this work is remarkable for its cleanliness, a property which it retains unimpaired as long as it is worn.

The qualities above enumerated strongly recommend my process to both operator and patient. As to its strength, durability and beauty, I challenge for it a comparison with any known process for mounting artificial teeth.

I do not claim for it that it supplies the place of skill, or puts the bungler on a par with the expert. I should take no pride in the discovery of any such *levelling* system. Work done by Cheoplasty, must bear its marks, distinguishing between the master hand and the apprentice. When I speak of its capabilities, I necessarily refer to such as are developed in the hands of those who know how to use it.

[After receiving the enclosed, we referred to the American Dental Periodicals; and judging from the testimonials given by the leading practitioners in America, we must infer that this "Cheoplastic Process" deserves the particular attention of our professional brethren on this side of the Atlantic. The testimonials are from Messrs. Austin, Bond, Dwinelle, Maynard, Ballard, and C. A. Harris, Dental Practitioners, who have a European reputation.] *Ed.*

ON LUXATION OF THE BICUSPID TEETH,

By M. J. Fehrlin, Surgeon-Dentist, of Neufchâtel.

Translated from "L'Art Dentaire" by W. G. Bennett, *Associate of the College of Dentists.*

The preservation of the teeth is so important—has so great an influence on the health—is so essential to personal beauty, and often to domestic happiness, that it is one of the great objects sought for by all conscientious dentists. The curative art of the dentist has been brought to such perfection, that he can succeed, by a rational and judicious treatment, in preserving a very great number of carious and painful teeth, with, however, the following exceptions:—1stly, those the crowns of which are too much decayed to admit of plugging, an operation to which a carious tooth should always be submitted when it is required to preserve it for any length of time. 2ndly, those attacked by periostitis, a disease which generally terminates in a fistulous opening in the gum, and in most cases, necessitates the extraction of the tooth.

It often happens that odontalgia presents itself with an intensity insupportable, produced by the exposure of the dental pulp. In such cases, the patient will not usually consent to a course of treatment which to him appears to be but the commencement of a new series of sufferings; he asks but to be relieved from agony, by the readiest possible means—the extraction of the tooth which has caused him so much pain.

It is especially in such cases when other remedies have been objected to, and when the tooth affected happens to be one of the bicuspids, that I practise luxation. This operation, which I have been in the habit of performing for nearly two years, and which, although limited in its application, has already enabled me to save a number of teeth that would have been lost without it, is performed with the key of Garengeo, and consists in raising the tooth in its socket, and replacing it immediately. The operation is somewhat analagous to that of extraction, although great difference exists between the two, it being necessary to employ much more care and precaution in making the movement for luxation than for extraction.

The result of luxation is the immediate insensibility of the dental pulp, so that the carious portion of the tooth may be removed at once, without causing the slightest irritation; the tooth is saved, and with

one-half the pain to the patient than would have been caused by extraction.

Without an anatomical demonstration, one might very rationally conclude that insensibility of the dental pulp must result from the rupture of so vascular and nervous a filament as that which is broken in the process of raising a tooth in its socket. In fact, should the insensibility be caused merely by the momentary derangement of the tooth, the pain will return on the following day, or at any rate in a few days after the operation, a circumstance of rare occurrence during the two years I have practised this treatment.

Before performing this operation, it is important to be satisfied as to the cause of the pain, for should the odontalgia be neuralgic or rheumatic, it would be better not to attempt it; otherwise, instead of affording relief, the pain would be frightfully augmented, and the tooth would have to be extracted after all. The remarks I have made respecting luxation, apply equally to extraction, which operation ought never to be performed during an attack of toothach, which is either rheumatic or neuralgic, as it would render the patient liable to increased pain after the operation.

The cases best suited to this operation are such as I have mentioned above, when the dental pulp is partially denuded of its protecting envelope, and when the pain is in consequence of this exposure. In such cases there is nothing to be feared, and success is certain, should the operation be performed with sufficient skill.

There is another case in which luxation is serviceable, that is when the dental pulp is attacked with inflammation without its being exposed to external influences. Ordinarily, the application of one or two leeches to the gum at a point corresponding with the diseased tooth will quickly cause those inflammatory symptoms to disappear, which, if neglected, are apt to result in more serious consequences. But there are persons who have the greatest dread of the application of leeches to the mouth, and who would not submit to this treatment in spite of the immediate relief afforded in cases where they are tried. It was under such circumstances a patient came to me with an upper bicuspid scarcely affected by caries, but which caused a most violent throbbing pain in the region of the diseased tooth. It was necessary that the engorged dental vessels should be relieved of their superfluous blood. The patient refused to allow leeches to be applied; without hesitation I tried luxation. Immediately after the operation the

patient felt relieved; I gave a gargle of alum in cold water, and towards the end of the day the pain had nearly ceased.

The treatment after the operation consists in the employment of an emollient mouth-lotion for the first day, to be followed by an astringent one. The patient must be advised to bite gently on the affected tooth, in order to favour its fastening in the socket, and also to force out any serous fluid which might be lodged in the alveolar cavity.

As the loosening need not have been very considerable, there is no necessity to attach the tooth to its neighbours by means of a ligature. The elasticity of the walls of the alveolus will be sufficient to retain it in its place. For this purpose, it must never be forgotten to press slightly upon that part of the alveolus bent out of its position, in order that it may be placed in its original position.

Usually, from six to eight days are required to fix the tooth firmly in its socket, and nothing remains but to preserve it from the effects of caries, and to give strength and solidity to the crown, both of which effects will be produced by properly plugging the cavity.

CORRESPONDENCE.

EXTRACTING TEETH UNDER THE INFLUENCE OF MESMERISM.

To the Editor of the Quarterly Journal of Dental Science.

Sir,—Having perused the second number of your Journal, I find an article on the extraction of teeth under the influence of mesmerism, by Dr. Roberts of Edinburgh. As he is not thoroughly convinced of its mighty influence, and perhaps there may be some others in the profession in the same predicament, permit me to communicate a little of my experience in connexion with that subject, as it may prove a very important adjunct in our practice.

A few days ago a gentleman was brought to me to have a tooth extracted, severely afflicted with paralysis agitons; his head was shaking like an aspen leaf: under these circumstances, how was I to get hold of the tooth, being the second inferior molar; I simply took hold of his head between my hands, and gently breathed upon the crown, and then made a few passes down his spine; in a few seconds he was comparatively steady so as to enable me to perform the operation with ease.

Another recent case. A lady came to me to have a tooth extracted, requesting me to put her into a mesmeric sleep, as she would not submit to the operation otherwise. In this instance I refused to do it, as it would take up too much of my time. "Oh," said she, "you need not be afraid of that, for I have been often mesmerised, and fall asleep in a few seconds."—This was actually the case, for I mesmerised her in less than one minute, and the tooth was extracted without any suffering whatever, on the part of the patient.

The following case demonstrates that it is not always necessary to induce the mesmeric sleep for the purpose of producing insensibility to pain; the patient was a gentleman who had several teeth painlessly extracted while in a state of perfect vigilance, his jaw only being locally mesmerised: the mesmeric operator in this instance, I may mention, was Mr. William Davey, of the firm of Davey and Jackson, 37, Northcastle Street, Edinburgh, neither of whom, however, was the professional mesmerist alluded to by Dr. Roberts.

Nearly twelve months since, a young woman came at my gratis-hour in the morning, to have, as I thought, a tooth extracted; I requested her to open her mouth, and she replied with it closed, "I canna;" still thinking that there was something wrong with her grinders, and that she kept her mouth shut through fear, I said with astonishment, "What in the world did you come here for! If you do not open your mouth, I cannot see what is the matter with your teeth; do you expect that I can do impossibilities, to extract teeth with your jaws so firmly clenched!"—"Oh, sir," said the person that came with her, "she cannot open her mouth; we came on purpose to see if you could do it."—To tell the truth, I was glad to hear such was the case—not glad of course that the poor woman was suffering from a locked jaw, but glad that I had at last got such a case under my own hand, for I had heard that mesmerism seldom failed in a case of this kind; therefore I was consequently anxious to try its efficacy; so I commenced by making passes down each side of the face, bringing the points of my fingers to the corners of the mouth for about ten minutes. This process, however, did not appear productive of any result; I then made passes from the nape of the neck to the bottom of the spine; and in seven minutes her jaw relaxed, and she could move it as freely as ever: I then asked her if she felt any peculiar sensation under the treatment? She said, as I moved my hands down her back, she felt as if I were pulling a string communicating with her jaws. She thanked me, and with tears of joy she stated

that she was afraid she never would be able to open her mouth again. The case occupied altogether seventeen minutes, which I consider well spent.

I have no doubt that most of my professional brethren have had patients who passed into hysterical paroxysm after undergoing an operation, or even previously, from the disturbing effects of fear; now this excited condition of the system can be removed by mesmerism, which is an additional advantage. I could mention many other cases besides the foregoing, but these will suffice for the present.

Edinburgh. Yours, truly, W. F. VERNON.

To the Editor of the Quarterly Journal of Dental Science.

Sir,—If not trespassing upon your space, I wish to make the following observations upon the method of restamping bent plates, communicated by Mr. O. A. Fox, in the last number of the "Quarterly Journal of Dental Science." Although the idea is not new in the profession, he may not have been aware of it. He does not give any description of the trough or mould he uses, but as the article is written, I am led to infer that it is the same as used for casting zinc models for ordinary use; if so, the same thing has been done ten years ago, but only with very indifferent success. About seven or eight years ago, I tried a trough made to correspond in shape, to receive the zinc model, upon which, the plate was to be struck up with a bottom to it; this had the effect of preventing the sand from getting away, which becomes very hard upon pressure; it answered the purpose intended very well. About eighteen months since, I had a mould cast in gun-metal, which is very strong, capable of resisting any amount of pressure required; I then obtained the most satisfactory results. Having now considered that this improved method could be recommended to others with confidence, I communicated it to Messrs Robinson & Underwood, and about the same time it was adopted, through me, by Messrs. Bell & Salter.

I am, Sir,

Most respectfully your obedient servant,

Denmark Hill, August 7, 1857. R. Thomson.

To the Editor of the Quarterly Journal of Dental Science.

Sir,—In the new Quarterly, I see that at the end of my article on "Remodelling" not as it is headed "Removing Bent Plates," the dis-

covery was in the first place "due" to Mr. Thomson of Camberwell. Now I mention this, as I can only say, I never heard of its being discovered by any one before; I have myself adopted the plan for years past with success. It only shows how much we have stood in need of a good journal for interchange of communication. I think it due to me, that in the next Quarterly, some notice should be taken of this, for it does not look well to have those remarks appended to my article, which may be thought to imply, that I had pirated another gentleman's ideas. Every one may be liable to forward articles that may be known to some few of your numerous readers, and by this means it may deter others from communicating to the Journal. My father, Robert Were Fox, of Exeter, was in practice there (now retired), for above twenty-eight years, and in a long career he often used to adopt new plans and ideas as they suggested themselves; and we have often remarked in the periodicals what have been termed new methods, &c. as nothing new to us, but what we have practised for years past. I could allude to some few now. Hoping you will excuse my freedom in addressing you, and kindly allude to this, and also wishing the Journal every success, in haste from,

Yours, O. A. FOX.

September 7, 1857. 14, German Place, Brighton.

P. S. I cannot, with all respect to Mr. Thomson, admit his prior claim to the hint I threw out, and hope you will relieve the unpleasant position I now stand in to the numerous readers of your number for October.

The above communication has been forwarded to us by the gentleman to whom it was addressed by Mr. Fox, in mistake—he, no doubt, supposing him to be the Editor. We can assure Mr. Fox, that in appending the remarks we did to his communication, we never intended to convey any invidious distinction. We merely asserted that a similar ingenious contrivance had been in use for some time at one or two dental establishments. The profession, therefore, are as much indebted to Mr. Fox as they are to Mr. Thomson; to the first for having publicly made known his improvement, through the medium of this Journal, and to Mr. Thomson, for his having introduced his method to the two establishments in question, where its merits could be fairly tested.—*Ed.*

ATTENDANCE OF DENTISTS ON JURIES.

To the Editor of the Quarterly Journal of Dental Science.

Sir,—It is the duty of every citizen to sacrifice private interests for the safety and well-being of the state, of which he is a component part, and to uphold every institution that conserves the national advantages; whilst in this free and benign country there is every scope given for the removal of wrong or obnoxious statutes, rendered so by the ever-altering state of society, or the continual uprising of other and important interests, which when sufficiently vital and represented, can ever make known their just rights and privileges, and obtain their recognition from the Legislature of the land. The heterogeneous condition, and want of cohesion as a body, of the Dental profession, now comprising in its own range, men of the highest cultivation of mind and manners, men of opulence, of literary and professional ability, who are diffusing benefits throughout the realm, has hitherto exposed itself and the public to an injustice, by having its practitioners liable at any time to be dragged away from the service of their patients, to serve on criminal juries.

Doubtless the majority of all right-minded Dentists, whilst feeling all that is due to their calling and position, and the peculiar injustice of the burden, yet willingly make the sacrifice in consideration of their claims and profession being unrecognised by the state. But it is time those claims be made known, and the basis upon which they rest fully advocated, and their exemption have the imprimatur of the law. And have not Dentists a legitimate right for this freedom? The practice of Dentistry may not have to do with many cases imperilling life, but its successful operation is such as most materially to render that life more comfortable, ay too, and to remove the cause of much disease, hitherto engulphed in the wide lists of "intractables." The duties of the Dentist, like the Medical man, or even more so, can very rarely be entrusted to another, so that he is compelled to be as a sentinel at his post day by day. The time which the Merchant or the Tradesman can abstract from the active pursuit of his calling, for the purpose of necessary recreation, cannot satisfactorily be taken by the Dentist; the business of the one can be for a time sustained in its integrity without injury or loss, or to a very trifling extent,

whereas in the case of the other, there ensues injury, dissatisfaction, and loss to his patients.

Have not the Medical men been freed from these duties, and why? Because, they cannot fulfil them without public loss; and the same reason holds good that Dentists should be exempt. Are there not continually arising in the practice of any man of repute, cases of emergency, requiring prompt and energetic practice, wherein delay would cause much suffering to the patients, who must either transfer themselves to the hands of another, in whom, though perhaps equally skilful, they have not the same confidence, which is so necessary in every profession, and especially in one, wherein the utmost fortitude is so frequently requisite.

These claims require not only to be made known to be recognised by the public and the senate, but also for the profession as a body to assert them without compromise, and to urge that such becomes their *legal*, as it is their professional right. By thus doing they will be advancing their calling and position, and be adding another step to its claims for state recognition, and protection from the practice of the uneducated and untested.

I am, Sir,

Yours truly,

Stockport, July, 1857. C. Barrow.

To the Editor of the Quarterly Journal of Dental Science.

Sir,—I send you notes of a couple of cases in Dental Surgery, for insertion in the next number of your Journal, should you deem them of sufficient interest to appear in your pages.

I am, Sir,

Your obedient servant,

Bridgewater. Henry Long Jacob, M.R.C.S.

DIFFICULT ERUPTION OF THE DENTES SAPIENTIÆ.

1. Mr. T——, aged about twenty-four years, at the beginning, of October 1854, suffered from swollen face, pain in the lower jaw and neck, headach, sore throat, and inability to open the mouth to its full extent. On October 9th, I examined the mouth, and found the lower dens sapientiæ on the left side partly through the gum, which was swollen, and discharging pus. I wished to extract a tooth

to make room for the eruption of the dens sapientiæ; but, as the patient would not consent to this, I lanced the gum, and prescribed fomentations, liniments, &c. The pain and inability to use that side of the mouth, however, continued, and a few days afterwards he consented to the extraction of a tooth. The second bicuspid being decayed, this was the tooth I decided on removing, the molar teeth being sound: on examination of the tooth after extraction, I found that the decay had reached the nerve, so that, perhaps, some of the pain which had been felt may have been owing to this circumstance, although the patient was not aware that the tooth was decayed. There being some little feverishness and disorder of the stomach, &c., I prescribed some aperient medicine. The symptoms soon subsided, and the eruption of the dens sapientæ was completed without further disturbance.

2. The Rev. — L——, a gentleman of middle age, dark complexion, and rather bilious temperament, suffered, during the year 1852, from pain in the right side of the lower jaw, swelling, stiffness, &c., which became worse and worse, involving the adjacent parts. A succession of abscesses took place, giving rise to a fistulous opening through the lower part of the cheek, which baffled the efforts of his medical attendants, and obliged him to wear a plaister constantly on the cheek. I saw him in the month of August, he having applied to me on account of something else; and on examining the mouth, I found the right lower dens sapientiæ just making its appearance very far back towards the coronoid process, the inside of the cheek and the gum along that side of the jaw much swollen and indurated, and discharging pus, the angle between the cheek and gum being quite filled up and obliterated; the first and second molars on that side were decayed, the roots only of the latter remaining. I pointed out to the patient that the mischief proceeded from these decayed stumps, and the want of room for the eruption of the wise tooth, and urged him to have the stumps extracted; but as the case had never been put to him in that light before, and as the symptoms were then slightly abated, he declined to submit to the operation. At the beginning of December, however, as the annoyance continued, he came to me again, and I then extracted the roots of the second molar, which were much diseased. I prescribed, also, fomentations, &c. The symptoms soon subsided—the fistulous opening quickly healed up; and when I saw the gentleman again, a year afterwards, the

wise tooth had come forward into its proper position, and the cheek and gum appeared quite healthy and natural, the indurated callous mass having disappeared.

The most remarkable feature in this case, was, that the mischief should have been allowed to go on so long, in spite of the indications of treatment being so obvious; and the circumstance next worthy of note, was the rapidity and completeness of the cure when the exciting cause was removed, notwithstanding the long continuance and the extent of the disease.

To the Editor of the Quarterly Journal of Dental Science.

Sir,—As gutta percha is so extensively used by dentists at present, for many purposes, and I am not aware that the *modus operandi* has ever been made public, but the method how to purify it kept a profound secret, I feel sure you will not consider it superfluous if I supply the deficiency, and make known to the profession how to prepare it for dental purposes. Take any given quantity of the gutta percha of commerce, and reduce it to shavings; place it in a wide-necked bottle or phial, and cover it with either ether or chloroform, which will dissolve it; allow it to remain for a time, and the white or pure gutta percha will be precipitated to the bottom in a white but hard mass. The impurities of the gutta percha will be held in solution, and can be poured off and used again for the same purpose: after distillation the residue at the bottom of the bottle should be taken out and placed in a basin, or some other vessel, and washed repeatedly with warm water. This must be repeated and constantly poured off, and ultimately left to dry, in a place where it will be free from dust, or exposure to the atmosphere: when thoroughly dry, repeat the washing with warm water, and ultimately amalgamate the whole ready for the operator. I remain, Sir, yours obediently,

August 14, 1857. S. Lord (Blackburn).

EXTRACTS FROM DENTAL PERIODICALS.

ABSORPTION OF ROOTS OF PERMANENT TEETH.

In the *Austrian Journal of Practical Medicine*, Dr. Heider gives the following account of the absorption of the roots of the permanent teeth.

The cause of the absorption of the roots of the deciduous teeth at the period of the second dentition, has been the subject of many observations and numerous hypotheses. All that we as yet know, with certainty, in respect to it, is, that there exists an intimate connection between the development of the permanent teeth, and the absorption of the roots of the deciduous teeth. In what, however, this connection actually consists, is not yet clearly explained. This much, however, is certain, that, at the period of the development of the permanent teeth, their enveloping sacculi become more vascular, and come in immediate contact with the roots of the deciduous teeth, and consequently play a very important part in the absorption of the latter—nay, in all probability, are the sole agents in effecting it. A renewed examination of the surface of the deciduous teeth, at which absorption takes place, shows that this is always on the side that is inclined towards the advancing tooth; and that when not merely the compensatory tooth, but its neighbour, comes in contact with the same deciduous tooth, two perfectly distinct surfaces of absorption, corresponding to the points of contact of the new teeth, are presented by the former, showing that both the advancing teeth in contact with it had contributed to the absorption of its root. Another fact places the correctness of this explanation of the means by which the absorption of the deciduous tooth is effected beyond doubt. When the permanent tooth is not developed, or its development takes place in a wrong situation, the corresponding deciduous tooth is not shed, but keeps its place in the jaw in after life. This is often found to be the case with respect to what are known popularly as the eye teeth. The deciduous teeth are consequently shed, one after the other, just in the order in which, by the development of the corresponding permanent teeth, their roots are absorbed by the latter.

The foregoing facts have been known to dentists for some time, but much less familiar are they with the fact, that the root of a sound

permanent tooth may be absorbed in the same manner as the root of one of the deciduous teeth, by the abnormal development beneath it of another permanent tooth.

In my collection I have six permanent teeth, the roots of which have been in this manner entirely or partly absorbed. Five were extracted by myself, and the persons from whose mouths they were taken, remained under my observation; for one I am indebted to my esteemed colleague, N. Terzer. These teeth are divisible into two groups; the one, where the posterior root of the second inferior molar tooth was absorbed in consequence of the expansion of the crown of the adjoining wisdom tooth; the other, in which the root of the outer incisor was absorbed by the intruding crown of the so-called eye tooth. In all, the surfaces at which absorption has taken place, present precisely the same appearance as those of the deciduous teeth, when these have been cast at the usual period. Especially is this observable in the second inferior molar teeth. In one we have the commencement of the absorption process, in a concave semicircular depression on that part of the root which was in contact with one of the projections on the obliquely-situated crown of the adjoining wisdom tooth; in another case, one-half; and in a third, the entire root is removed by the development beneath it of the dens sapientiæ. In all these cases, the extraction of the affected tooth was rendered necessary by the intense pain suffered by the patients, connected in one with inflammation of the periosteum of the root, and in the two others with exposure of the nerve.

Equally characteristic is the surface at which absorption had occurred in the incisors. In one there is an oval depression on the posterior surface of the root, near the neck; and in the other two the root is entirely removed, and one of them exhibits a cavity corresponding to the point of the encroaching eye tooth. The removal of the affected tooth, which in one case was already very loose, became necessary, in order to give room for the development of the approaching eye tooth.

These observations show, conclusively, that the process by which, at the period of the second dentition, the roots of the deciduous teeth are removed, is neither specific nor restricted to the first set of teeth, but that it may be called into action in the case of the permanent teeth, and cause the removal of their roots also, and that it is dependent partly upon the structure of the dental tissue, and partly upon the increased vascularity of the outer portion of the sacculi of the ap-

proaching teeth. The process has great similarity to that which occasions the absorption of the bones, in consequence of the development of tumours in contact with them, and the two are probably identical. —*American Journal of Dental Science.*

MODELS AND CASTS. By H. R. Smith.

In my last article, I endeavoured to guide the student over the forms of taking impressions of the mouth in wax and plaster, and which, if he rightly understands, he is now ready to proceed with me as I pass on to describe the next step of our operation.

If our impression has been taken in wax, we with a camel's-hair brush give it a delicate coat of sweet oil. If in plaster, we first give it a coat of varnish, and then one of oil, to keep the plaster from adhering to the impression.

We then surround it with a band of paper, waxed cloth, or sheet lead, the width that we wish our model to be thick.

After this is done, we prepare our plaster by mixing it with water to the consistence of pretty thick cream. We first place a small quantity in the impression, and see that it fills all of the small indentations and impressions made by remaining teeth, which is done by blowing on the plaster, and by jarring the bench near our impression.

Unless that is done, small air holes will be found in our model, which will make it imperfect.

After that is done, pour in the remaining plaster, to make it as deep as we wish.

The impression is then allowed to rest until the plaster has become well hardened, which time will vary according to the quality of our plaster.

After the plaster is sufficiently hardened, it should be removed very carefully from the impression, and trimmed and varnished.

For this purpose, either the white or yellow varnish may be used. The white is made by dissolving gum sandarach, and the yellow gum shellac, in alcohol. It should be applied with a camel's-hair brush, and spread lightly and evenly over the model.

When the varnish is dry, then the model will be ready for use. If, however, a chamber is to be used in the plate, it is best to prepare for it at this stage of the operation.

As almost every dentist has his favourite way of preparing his air chamber, it would be useless to attempt to give all of them; but I will give two ways of performing the operation.

The first is when the chamber is stamped into the plate—the second, where the chamber is formed by the shape being cut out of the first, or main plate, and afterwards forming over it a second, or false plate, at a little distance from the first, giving the lingual surface the appearance of a plate without any chamber.

When we wish to stamp a chamber into the plate, we take a piece of lead rolled out to the thickness we wish our chamber, then make it the shape we wish, and with a little wax, or gutta percha, fasten it on to the plaster model in the situation where we wish our chamber to be in our plate.

After this is done, spread a light coat of varnish over the lead and surface of the model.

The next step in our operation is to prepare our sand for use in moulding.

The best sand for our use is that which has been used for some time in a foundry, and become fine. The sand should first be passed through a fine sieve, to remove all coarse particles and sticks. After the sand is sifted, then water should be sprinkled on it from a sprinkling pot with very fine holes, care being taken that too much be not put on, lest it become too wet. Then rub and work the sand until it is thoroughly tempered. It is well to let it stand a short time before it is used, for it works better.

This is always done by those who cast fine work in iron and brass, as the mould is much smoother and perfect than it would be if used when first prepared; and as a perfect cast is of the greatest importance to the dentist, it is better to use all precautions in our power.

Now place the model on its base on the moulding table, and place the moulding box around it. The sand should be rubbed fine, or sifted, as it is placed over the model, otherwise the metal when poured in will sink deeper into the sand in some points than at others, which will, of course, make the metallic model, or cast, imperfect. Great care should be taken in pressing the sand around the model. If the sand is left too loose, the metal will sink into it, and the cast will be rough, while, if the sand is pressed too hard, the steam caused in the wet sand will not be able to escape through the sand, but will pass up through the metal, causing ebullition, thereby making

the cast full of holes, and imperfect. As no rule can be laid down for this part of the operation, practice only can teach how it is done.

After the sand is compressed, the box should be turned over, and the model rapped gently with a small mallet, or hammer, to loosen it in the sand. After this is done, the model may be easily withdrawn. Care should be taken not to rock the model while drawing, else the plate, when stamped, will rock in the mouth.

A little pulverized charcoal in a muslin bag may now be dusted over the mould, and any excess blown off with the mouth. This will absorb the moisture on the surface, and give a smooth cast.

The mould should now be covered up, to prevent any damage, while we prepare our metal for pouring.

At this stage of the operation, we must choose what metal we will use for our casts.

Let us first consider what qualities we want combined, to give us the most perfect cast. In the first place, we want that metal, or combination of metals, that will have the least shrinkage, for if our metal shrinks very much, as a matter of course, our plate when stamped will be too small for the mouth.

Secondly, we want hardness in our male cast, otherwise, when we stamp the plate, the metal will yield, and be so bruised and battered down, that the rogæ of the mouth will not be represented on the plate.

And thirdly, we want a metal that will, combining these qualities, give us the smoothest cast.

Nearly every dentist has his favourite metal for his casts, and each in turn, are tried, and laid aside by others. One prefers brass, another cast iron, another zinc, and others a combination of several metals. As for iron and brass, the difficulty of working them in general practice would exclude their use, even if in many respects they were considered preferable.

Type metal makes a very perfect and sharp cast, but it is too soft to resist the plate while stamping. Block tin makes a sharp cast, but like type metal, it is too soft to answer our purpose. Zinc is good on account of shrinkage and hardness, but owing to the large size of its crystals, makes a rough cast. Antimony has hardness and small shrinkage, but too brittle to bear the necessary force to stamp the plate.

I will now give my experience in regard to a combination of these metals to serve our purpose.

My first preference is for block tin six parts, metallic antimony one part. This will give a sharp cast, and at the same time one quite hard.

Great care must be taken when first melting these together to prevent oxydation, for the antimony requires so great a heat to melt, that if care is not used, much of it may oxydize away. During the melting, wax or tallow should be occasionally thrown in, to act as a deoxydating agent, and also as a flux to assist the antimony and tin to melt and combine.

My second choice is, zinc five parts, block tin one part. The zinc gives hardness, and the tin smoothness, and a good cast is the result.

And my third choice would be clear zinc, which, being alone, is not liable to the objection of any of the combinations, that of having the proportions destroyed by oxydation.

For the counter or female cast, a yielding metal is necessary, and for this purpose we prefer, first, lead; secondly, type metal.

To ensure a perfect fit, I use two sets of casts, one to first bend and partially stamp, the second to finish stamping. The first becomes very much bruised and defaced, but the second brings out in bold relief all the rugæ and inequalities of the mouth.

The casts should be made very heavy, to prevent springing and getting out of place.

Before turning the metal into the mould, it should, after removal from the fire, be stirred with a piece of wood, until crystalization commences, then pour gently into the heel of the mould.

After the cast is sufficiently cooled and removed from the sand, and cleaned, it should be well coated with Spanish whiting and water, and well dried. This will prevent the other metal, when poured, from adhering. After surrounding our male cast with our band, or moulding box, we then pour our lead, which has been previously partially cooled, as previously directed for the male cast. Then, when cooled, our casts, or dies, are ready for use.—*Dental Register.*

To the Editor of the Quarterly Journal of Dental Science.

Sir,—I enclose you an abridged translation I have made of an article in the May number of "L'Art Dentaire." The novelty of

the operation fairly entitles it, I think, to a place in your valuable Journal. I am, Sir, your obedient servant,

THOMAS UNDERWOOD.

A NEW MODE OF OPERATING ON A TOOTH;

where the removal of the fellow-tooth, on the other side of the mouth, had occasioned paralysis of the muscles of the face.

BY M. DESIRABODE.

The following case shows how much prudence is necessary under certain circumstances.

I was lately consulted by a lady, forty years of age, who had suffered for more than a month, excessive pain from the first bicuspid on the left side of the upper jaw. Every known remedy had been tried by her professional adviser—cauterization of the nerve, and dentine, plugging the cavity with gold and gutta percha, applications to the tooth and rubbing in of ether, morphine, strychnine, &c.—nothing alleviated her sufferings. The extraction of the tooth appeared the only plan to give her relief; but the patient hesitated, and with reason, to resort to this alternative, for the removal of the similar tooth on the other side had occasioned paralysis of the muscles of the face on that side. This paralysis had been instantaneous; she perceived it immediately she returned home after the operation. The operation had been skilfully performed, and attended with but little pain: the fangs of the tooth were well formed, the alveolus had not been fractured, the dentist had used a straight pair of forceps, the instrument best adapted for the removal of the upper bicuspid teeth. The physician in attendance on the lady, had wisely counselled her to suffer patiently, as he feared a repetition of the same accident.

I adopted the same course, and advised her to trust to time to alleviate her sufferings. She returned to me the next day, saying, that the pain was most excessive, she had not had one moment's rest, and that she could not remain in this state, for the least pressure on the crown of the tooth produced intolerable agony. I decided to remove the plug, and to cauterize deeply: this had already been done by one of my professional brethren. This produced no amelioration, and her sufferings at night were even worse than before.

At eight o'clock the following morning she came to my house, accompanied by her husband; her face bore evident traces of the anguish she had endured; and she declared she was resolved to run the chance of the consequences of the extraction, which, she said, might

after all be attended with no ill effects. Having previously seriously considered the case, I determined to adopt the following plan :—

The upper lip was elevated by the husband—I made a longitudinal incision of three quarters of an inch long in the gum, at the probable extremity of the roots, for they could not be traced externally; by aid of a bone cutter, I pierced the alveolus, and removed a sufficient portion to allow me to get at the two fangs.

This being done twice, and without any pain, I pushed a bistory to the extremity of the roots, and divided the nerve where it entered the foramen at the apex of the fang. The tooth could now have been extracted without the least apprehension as to the future, but I recommended its being retained. The pain ceased, as if by enchantment; the cicatrization was rapid, and the cure complete.

IRREGULARITY OF THE TEETH, BY J. D. WHITE.

We referred in the last News Letter to the very frequent premature extraction of the deciduous canine teeth, and the consequent approximation of the permanent lateral incisors and the first bicuspids, also the projecting character of the permanent canines. In the treatment of this condition of things a great deal of consideration is necessary; an endless variety of cuts would scarcely suffice to fully illustrate it; as each case seems to require some new modification. We will name some of the reasons why extractions should not be resorted to. As a general rule, enlargement of the arch is indicated. Before resorting to the treatment, it is necessary to first study well the relation of the jaws to each other, or their *articulation*, to see if there be the same number of teeth in each, or whether they are equally advanced in their development, so as to be of equal size at maturity. As a general rule, when the first canines are prematurely extracted, the permanent laterals fall backwards and inwards, narrowing the arch, and sometimes they are grasped inside of the lower arch. Now, if the bicuspids or molars be extracted to let the permanent canines down in line, the laterals will remain in their place; and when the canines get into line, the arch in such cases will be so depressed or strained at this point, from canine to canine, as to give the superior jaw the shape of the letter V, whilst the lower jaw retains its natural ellipsoid. If the first inferior molars have been extracted, as is sometimes true when cases come to us, and the superior canines require room, we are in the habit of extracting a bicuspid on either side, or a first molar.

When the first molars are very defective we prefer to extract them. It is a rule always to extract the unsound teeth, and if the canines do not take their places by the healing of the parts, they should be aided by springs, wedges, or ligatures. We have in many cases extracted the inferior first bicuspids, and drew back the inferior canines and incisors to make the lower arch equal with the upper, when the first superior bicuspids have been erroneously removed.

It frequently happens that the front superior incisors fall back of the inferior when the teeth are closed, by the premature extraction of the first canines; in such cases, all that is required is to bring the incisors forward, to let the canines in the arch. The first inferior molars had been extracted for some time, and, in consequence, the lower arch was shorter than the upper. The patient was a young lady, seventeen years of age; the case, after the extraction of the first bicuspid on the right side, and the second bicuspid on the left, on account of its having been decayed. We did not trust to time, as we do in many cases, especially younger ones, to correct the defect, but swedged a plate to the roof of the mouth, and attached it to the first molars, as if it were to set teeth, and extended spiral springs from the first molars inside the arch, to the canines, applying as much tractile force as the teeth would bear. This treatment in three months produced a satisfactory result. The slight irregularity of the front incisors yielded to the application of ligatures in a few days.

ON ARTICULATING,

With a Plan for the Improvement of Artificial Dentures.

By Louis Jack, D. D. S.

The term "articulating," is, in our art, generally applied to the act of adapting the plates to the mouth, arranging the wax guides to proper length, fulness and curves, necessary to restore the sunken feature, to aid the enunciation of sounds, and to secure the mastication of food: also to the temporary arrangement of teeth upon the plates, to secure the same objects. This process of articulating is important in the preparation of artificial dentures, inasmuch as the harmony of the features, the correct articulations of the voice, and the prehension and mastication of food depend so much, indeed, entirely upon it. In correctly performing this operation, several circumstances are to be taken into account, which have a great influence, when properly considered, in guiding us to meet successfully these above-stated ends; such as size of tongue, length of lips, depth of palatal surface, breadth of upper

arch, relative breadth of upper and lower arch, form of anterior portion of alveolar ridge, tone of the muscles of cheek, etc. In the majority of cases all of these ends, or uses, previously mentioned, can be secured, by varieties of size, form, fulness, length, and thickness of teeth, breadth from out to out, curve of arch, etc., as none of the essentials to either are incompatible with the means required to fulfil the others. Thus, for instance, in the case of a large, highly muscular tongue, where a necessity exists for considerable room within the denture, to enable this organ of continual and astonishing motions, to have free play, the face will be found full, alveolar arch bold, and the palate broad, thus allowing a good foundation for a wide and full dental arch, and a firm support in the strong accompanying cheek; enabling us to secure good mastication, without interfering with correct enunciation, or causing protrusion of the lips. Sharpness of feature, narrowness of palate, and acuteness of arch, are accompanied by the small tapering organ, thus permitting us to make a narrow denture, in order to secure a firm support; indeed, these varying circumstances indicate the necessity of adapting the teeth to the conformation of the surrounding parts, and guide us in the direction we should pursue.

Too little attention is paid by all of us to these considerations. Artificial teeth are generally very artificial things indeed, instead of being so adapted to be, as it were, a part of the individual. But it is in the power of all dentists to improve much in the replacement of teeth; a better and more harmonious adaptation of dentures is certainly needed; something better is expected of the votaries of an art, claiming a position among the professions, than efforts which are recognised as out of place by the most casual glance, and would be coarsely criticised by the roughest tinker or blacksmith. Something better must be accomplished before we can be remunerated for our pains, either in a pecuniary sense, or with the satisfaction of having done well our duty.

I will now describe the method employed by many in articulating, and then in as concise a manner as I can, explain a new process, by which more consistent adaptations can be attained.

Previous to the plates being fitted to the mouth, a piece of white wax of sufficient size is selected to make the wax guide; this is warmed by passing it to and fro through the flame of a spirit lamp, until it is of such consistence as to be readily pressed into the desired form. It may also be heated by holding it before the fire upon a

fork-like instrument, at such a distance as to warm the piece throughout, without occasioning the surface to melt. The wax is now shaped by the fingers to the desired height and thickness, bent, and pressed upon the plate, covering the alveolar ridge, and extending on the outside to the rim, or to the edge of the plate. White or bleached wax should be used in all cases for this purpose, as the yellow is entirely too soft; besides, it has not the neat and clean appearance of the bleached.

After the plates are fitted, these wax guides are fastened to them, by simply heating the metal until the wax begins to run around the edges, which will prevent any displacement that might be occasioned by the ingress of moisture between the guide and plate. The lower piece is now placed in the mouth, and trimmed away at such points as are decidedly too full; the height is regulated, and the upper surface made level. The upper piece is next introduced, and a proximal adaptation to the face made by cutting away any unnecessary fulness. The trimming is now conducted very carefully, taking off a little in one place, and a little in another, where required, from both upper and under, until the contour and expression of the lips and face is correct. This is a very nice, and somewhat tedious operation. The wax is now cut away on the inside to the thickness intended the teeth to have, to free the tongue from any unnecessary incumbrance. It is well at this stage of the operation to hand the patient a book, requesting them to read aloud, or to engage them in conversation; relieving them from the chair, to remove any constraint. At first, the expression of the lips and action of the muscles is unnatural, even when the adaptation of the pieces is very good, because of their foreign nature; in a few minutes, however, much of this will pass away, when we can better discover any faults, and more truly correct them. This is so important as to deserve further consideration than it has here incidentally received; I would urge attention to it, upon those desirous to produce good expression.

The width of the upper wax, at the back part, should be such that the inside of the grinding surface of the teeth will be slightly within a perpendicular to the centre of the ridge; if further out than this, the adhesion of the plate during mastication is less secure—if further in, the tongue may be cramped in its action.

The centre line is now marked with the point of any suitable instrument, the commissure of the lips is drawn back, and two lines

made, crossing each other at the back part of the wax, on both sides of the case; by means of these lines the two pieces are accurately adjusted to each other, during the process of making the articulators, in the same position they held to each other while in the mouth. The manner used to make these is so simple as not to require description.

I have now to bring to notice a method by which the form, arrangement, and graceful irregularities of the natural teeth, may be very accurately produced in the artificial structure. All the additional arrangements that will now be required, are several sets of natural incisors and canines, and two sets of molars and bicuspids. They should then be digested in dilute caustic potash, to remove all traces of the pulp and periosteum. Each set should be now put away by itself, in a bottle containing alcohol, for future use.

After the articulation is so far completed as has been above described, a set of the natural teeth is selected, of the form and size appropriate to the sex, temperament, and features of the patient. The wax is now cut down along the centre line, the incision extending nearly through the wax, and again at a distance sufficient to let in one of the central incisors. The material between these incisions is hollowed out to receive the tooth; the central is pressed into the place, adjusted even with the remaining wax, and slightly banked around the end next the plate with wax. The same process is gone through with each tooth until the arch is completely filled. Only one bicuspid is set on each side, for reasons to be mentioned hereafter. The portion representing the gum is next properly rounded, and may be made the colour of the natural gum by covering the surface with a thin film of wax, covered with carmine, or rose-red; this brings out the teeth in relief. At the next sitting of the patient—this arrangement requiring more time for its completion than is found at an ordinary sitting—the plates and teeth so fixed are put in the mouth, and any needed alteration, in inclination, turn, or prominence of any of the teeth, can be easily made.

This form is now copied by the tooth-carver, which can be done with considerable accuracy; I believe with entire correctness by a neat workman. Moulds are made over, or against the row of teeth, and in these moulds the enamel is first laid; upon this the body is pressed: thus an accurate copy is effected.

It must be remembered, in selecting the teeth, that the porcelain

material, in burning, contracts. This contraction amounts, generally, to one-sixth. This is the reason that but one bicuspid is set. In moulding, this tooth is produced in both the front and back block. For fuller descriptions on this point, see an article of Dr. Calvert, in No. 4, Vol. VII. of Dental News Letter. To him, I believe, is due the credit of having first made public the method of enamelling blocks in the moulds.

It is readily perceived, that in this manner a great improvement may be made in the relation of artificial dentures to the face; at least it places the form and arrangement of the teeth in the hands of the operator, instead of throwing it upon the unguided skill of the manufacturer. This method, it is true, can only be fulfilled in block-work, and will be used probably by those only who have been in the habit of having their teeth so made. Notwithstanding, " block-work" has many decided qualities over any other plan; none but those living near a block manufacturer can ever expect to have them made satisfactorily, a personal explanation being necessary to an understanding of the case: for this reason, and on account of the difficulties and disadvantages of making our own teeth, this way of setting has comparatively few followers. By an obedience of the rules here laid down, these difficulties can be easily overcome. It is not here claimed that perfection can be attained, but that a decided improvement may be effected over the general standard of work made in this manner.

The best imitator of natural things must come far short of success, especially when his efforts are compared with true forms, or placed in association with other natural forms. There is in the soul an inexpressible power, which enables us at once to detect departures from harmony; each sense is disturbed by the slightest unpleasant touch; the attuned ear is jarred by a trifling discord; we are pained by any departure from the true of associated forms, although the fault may be so trifling as barely to excite a thought. Let us, then, cease to be mere imitators; let us enter at once the domain of nature. We then can come forth, bearing in our hands true copies of our skill. However thus we may copy truly, however thus we may do better, and thus be on a truer path, he must be a genius who produces entire correspondence of feature; his name would be worthy a place among the gifted of all ages, and he would deserve the praise of all men.

SOME PRACTICAL REMARKS

On making Casts, working Gold, making Solder, taking Impressions in Plaster, Soldering, &c.

By A. W. Todd, Montgomery, Alabama.

Gentlemen—Permit me to introduce a few plain ideas, descriptions, and drawings, to your consideration:—

1. In reference to materials for casting. Take common Spanish whiting, and for every pound add about half a gill of any good oil, (perhaps sweet oil is best), beat well in a mortar. If too dry, add a little more oil; if too damp, or moist, add a little whiting, till (like sand) it is ready for moulding. Once ready, always so, for a long time, and makes as pretty castings as anything in the world. Of late I use nothing but old type, as it is as good as anything yet discovered. Do not pour it, in any case, until it wrinkles considerably on turning it backwards and forwards in the ladle. To keep the two metals from sticking, use the common pickle, as a wash, instead of chalk, or whiting: wipe it dry, &c.

2. Proceed as follows:—Have some sheet Russia-iron cups, made two and a quarter inches deep and three and a quarter in diameter, *without bottoms*, and have your plaster *patterns* prepared as follows:—first, varnish well all over with the shellac varnish, then, if there be any place on the outer surface that is not likely to *draw*, fill it up with a suitable piece, or sheet of wax; make it very smooth, by wetting it, and rubbing it down with a glass stopper, or something of the kind. Varnish all again. Let it dry three or four minutes. Set it down in your tray of whiting, and set your cup over it. Throw in your whiting; pack round hard, nearly to the *gums*; turn it upside down, holding it in the hand, and with a suitable brush clear the *mouth*; set it down, and sieve on, till covered; then fill up cup, pack well, scrape off, and have a long thin needle, and be sure to perforate well all over the cast, and especially the deepest part, and be sure that the needle touches it; neglect this, and an air-hole, in the roof of the metal cast, will be the consequence. The wax in the plaster roof for making the chamber should be about this shape and size, in most cases, for a full *(half)* set; let it be at least 3-16 of an inch thick, file it down, and carefully pare off the edges to a feather edge,

as shown by the ink marks all round*. Rub down with a suitable piece of glass, as above described. Thus you will have the roof of the plate much easier to work, and feel so much more agreeable and natural to the patient. Indeed, great pains should be taken to have the wax so shaped, that its vacuum shall answer all purposes, and yet occupy as little space in thickness as possible. When properly done, it is hard to tell, by looking at the plate or job, when finished, where the chamber is. I am in favour of as large a chamber as possible, so as to distribute the given pressure as much as possible, as it makes it the more *tolerable* for the chamber portion of the roof. If there is as much bearing surface above as below, for masticating, what more is needed ?

3. Having procured your metal cast, and having another sheet-iron cup, 2½ inches deep and 3½ inches diameter, with a loose bottom, with a hole in the centre, for the purpose of passing a common wood screw, half an inch long, into a hole in the centre of the metal cast (either drilled or made by sticking a wooden peg into it while cooling), screw the bottom fast to the cast, set your cup over (let it fit the bottom a little tight), put in your whiting, pack well around up to the gums, and all round the sides to the top; now clean the *mouth* of the cast by turning it upside down, and brushing and packing with the fingers, till you leave all naked that is necessary; then pour in your metal as before directed (as cool as possible), and separate, wash, wipe dry, and varnish well all over, which will keep your fingers from being *leaded*, also have a good tendency to keep your plate from being leaded while stamping; but to be safe, always before annealing, sponge with nitric acid. The best way to *stamp* is to use a *set hammer*, or something of the kind; it will save your cast from bursting, and is much more direct than blows from the hammer upon the naked cast.

4. As many are very much troubled to get gold to work or mill well, I will give my plan, which I discovered about fifteen years ago, and have not seen any case of its failure. Take a suitable-sized crucible, rub its pores inside perfectly full of common chalk, put in your filings, scraps and gold (having first cleared the filings of whatever iron and

* With the addition of the dimensions, we think the description sufficiently plain without a drawing. It is the ordinary form of air chamber, one inch long, by one and a quarter inch wide at widest part.—Ed.

steel dust there may be in them, by means of a magnet). Set your crucible into the fire, and let it heat slowly, to prevent cracking. Then commence blowing slowly till well *melted;* be sure to keep out the coal by having it covered with a scale of brickbat, or something of the sort; do not put any metal about your crucible except tongs, and they should not be suffered to touch the fused metal. Let the metal be shaken round occasionally, by lifting the crucible a little and giving it a small circular motion. Drop in a small piece of borax at the same time you put in your gold. When thoroughly melted, and having been well agitated, pour it into your ingot, it having been well cleaned, oiled, and warmed (the oil must be free from water); now try your gold, and see if it cracks under the hammer (gently hammering the edge), if so, put it back into the crucible, and having prepared plenty of *refined* saltpetre (nitre), by reducing it to a coarse powder in a mortar, *put in plenty*, so that when you get up a high heat it will boil over, push up your heat, and let it run over freely; when it subsides, twist the stuff well once or twice, then pour in another good quantity of your nitre, cause it to flow over again freely, then twist as before, keeping a high heat all the time (as one must be in good earnest); then pour into your ingot, having it well prepared as before. Having faithfully followed the above directions, your gold will roll first rate. If you find it too soft, on hammering as before, a small quantity of copper wire (is best) must be added, which will make it a beautiful colour, and quite springy.

5. To make the best *solder*. Take, say 240 grs. of our gold coin, (pick the reddest), and add 80 grs. silver coin, or any good silver, and 40 grs. copper wire, which is 2-6 silver and 1-6 copper, any amount you like, so the same proportion is observed. Have your crucible prepared as before, put in your gold and silver, a little borax, melt well, twirl it a time or two, then drop in your copper, and just as soon as it all melts twirl it well, and pour out immediately into the ingot. Before you commence rolling, always hammer the edges all round gently, to a smart slope, which has a good tendency to prevent cracking or splitting, and be sure to anneal well, and often, especially in the beginning. I do it by heating to a low red, and plunging into water. *Anneal before you hammer, and again before rolling.* The above is intended to be a very plain and brief detail, and I hope will be well understood. Others may fail, but I now have no fears about it. It may seem very simple to others, and they may have more

simple and short modes, and equally as certain ; if so, I should like to learn them.

All who have not commenced taking impressions in plaster casting, will find it to their interest to do so. A little practice will prove it to their satisfaction, although the teeth (if any) in many cases are so *ragged* and irregular, that it would seem almost impossible to get a good one ; yet it can be done. Though the impression breaks in removing, save the pieces as dry as possible, by directing the patient to drop them out of their mouth into their hand immediately. They can be put together as easily as many other things, varnished, oiled and filled, which do by having your plaster quite soft, and having no drops or puddles of oil in the impression ; dip out a teaspoonful, and pour it on the impression, so that the plaster will run into (not over) the deep *holes* made by the teeth or otherwise, by continuing to pour a little at a time, so as to cause it to run out of one hole over into another, and another, and so on, till all are full, giving it a chance in every case to run to the bottom on one side, and fill up. Thus continue till all are full, then pour in your plaster. Follow these directions, and you have no need of shaking, jarring, or blowing your plaster, but will find all perfect. When it is highly important to have the teeth draw whole, take a sharp-pointed instrument, and perforate the centre of the points or bottoms of the holes, and file the points of common sixpenny nails round and sharp, and stick them in as many places as is important. Let them stand in a suitable direction, so when drawn (the impressions separated), they will be found occupying the centre of their respective teeth, their sharp points projecting a little. Great care, pains, and patience is very necessary sometimes to separate the *plasters* without spoiling them. Commence by giving a light tap all round the tin downward, which will soon produce a hair line of separation. Then commence working it with the hands, continue gently and gradually till you get them apart, when you will have a perfect model, one to be fully relied upon, if the proper pains were taken in getting the impression of the mouth. To keep the teeth in their places, have your plaster mixed with about half sand, and of the very finest. To prevent the plate springing, have the backs of good thickness, and be sure to make good joints, so as to use but little solder. Trim the plaster as thin as possible, and so that binding wire will press every tooth downward ; pass turns round your plaster, so each tooth shall have the benefit of one or two, as they may seem to require. The plaster should be serrated

all round its edges, to keep the wires from slipping. This done, place your work on a large piece of pumice stone, it having a kind of cup dug out of it to receive it; have a handle stuck in the opposite side; pass some two or three wires round, so as to secure the work from falling, but be very careful not to press it tight, or you will cause it to *mash* or spread so soon as it gets hot. Heat by means of a flaming blaze, passing your work from side to side till hot, then commence soldering at one end, and go on gradually to the other, keeping up nothing but a flaring blaze, which should be suddenly and severely dashed on at the proper moment, and withheld the moment the solder flows, and shows a smooth face: use as little borax as possible, for, when there is too much, it makes the work rough. Pumice stone is much neater than coal, and like the whiting, is always ready, though it requires more blowing; yet, the work is much safer, and one, with a little practice, will find he can do a better job on it than coal. Perhaps, spirit self-acting lamps are best, but I have never used them, and hardly think I ever shall.

To make the best lamp, have a tin box made two inches square, one foot long, with both ends stopped; let a spout be soldered to one end, five inches long, raised so that the liquid will not run, and when sitting level; also have a large hole on the top to pour the liquid in*.

The above lamp is the best out for mouth-blowing, as it can, by putting a weight on it, be made to extend out from the bench, so as to work round the blaze freely; besides, a little tilt gives an extensive back body of fluid at the base of the spout, so as to blow or work on for a long time without alteration. It is also very portable.

The above is very respectfully submitted for your publication, if you are so disposed, as it is intended for nothing but a benefit to the faculty and the world at large.—*Dental News Letter.*

VULCANIZED RUBBER BASE FOR ARTIFICIAL TEETH.

By Dr. C. S. Putnam.

With all deference to the opinion of those who still adhere to the use of metals in the mouth, I beg to call attention to two important

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* Here, again, a cut is unnecessary, as the description is sufficiently plain.—Ed.

considerations in Artificial Dentistry, which seem to have been heretofore almost entirely overlooked by the profession ; viz.—

First.—The irregular and injurious chemical or electrical, or chemico-electrical action of all metallic plates in the mouth (platina is the least objectionable).

Secondly.—That as far as the patient is concerned (except, perhaps, in the matter of cost), no improvement in a base for artificial teeth has of late been, or can be made, using metal, to remedy the unyielding rigidity which but few, even of the most limited practice, cannot have failed to have heard remarked upon by his patrons. This fact has been particularly forced upon my notice by the remarks of those patients who have had substituted sets of teeth upon *Vulcanized Rubber*, for those they had previously worn of silver, gold, and platina respectively. All make a uniform comparison, and none vary materially from the opinion of a lady Quaker " Friend" who said, " Thee must remember to tell thy patients, that should they desire to first know the difference between teeth set on gold, and those set on vulcanized rubber, they must get for one foot an iron shoe, of the same thickness and dimensions as its mate ; and by wearing both a short time, they will be enabled to decide which to chose—thy teeth set upon gold, or thy teeth set upon vulcanized rubber."

These are points which cannot be controverted, and which should condemn for ever the purest as well as the basest metals for dental use, if a more useful substitute can be obtained.

There are those who agreed with me ten years ago, that metal in the mouth should have no place, if a substitute could be found. And so satisfied are the French of this fact at the present day, that they prefer to pay yearly for a set of teeth upon bone or hippopotamus, rather than to experience the feeling of the iron shoe.

Then consider the point of electrical action. What chemist is there, who will give us a theory, by which, after examining the mouths of our patients, we can alloy even the purest metals, so as to prevent their injurious electrical effects upon the glands and nerves? Who is there that can say that 18 carat gold plates, and even 20 carat, in many mouths, will not, in the short space of a few months, weigh from 5 to 10 grains less than when made? In one year, the whole plate, in some cases, has become so thin as to be quite useless. Will any one demonstrate how a plate could be thus worn, in so short a time, by the brush, or by friction, in ordinary use? Are all the thin, worn out plates, which we take in exchange

for new ones, worn by electrical action or by use? Or, did the dentist try in the manufacture to see how thin he could make them?

For the several last years almost every improvement in artificial dentistry has been sought after, by many dentists, for the purpose of "economy of time and expense to the operator," and, as a general thing, all such improvements result in but little benefit to patients. It is now a fact which needs no proof, that a set of teeth, all things considered, made upon platina in the best manner, is far better *for the patient*, than if mounted upon any other metal. Yet, no other style is made (using metal), which requires the skill, time and pains-taking, that this style of work does; and the expense of material is no greater than if ordinary gold plates were used, with blocks or gum teeth. And still no other style that has been used as much, has met such determined and *selfish* opposition as the "continuous gum work."

If I may be permitted to join issue with advocates of *any* process on metal, I would place vulcanized rubber in opposition to all and every combination of metals as a base for artificial teeth, if for no other reason than its POSITIVE UTILITY AND COMFORT TO THE PATIENT.

This style of work has now been *fully proved*, and found to combine all the useful advantages to the patient of every other style of artificial dentistry; and it also possesses *two* advantages over all metals, as before intimated, viz. it is used without any injurious electrical action; and is free from that iron-banded rigidity, peculiar to common work, and also made to afford much more reliable aid to mastication—the great object of all teeth.

The durability of vulcanized rubber in the mouth, I need not advocate, nor speak of its firmness as a base; for no sane man could well examine a set of rubber gums without readily forming his own favourable conclusions.

But notwithstanding its many valuable advantages to patients, (and I hold that all improvements which benefit patients, do likewise act reciprocally on the operator), the work has an ordeal to pass, before it will be generally adopted. The proprietor of one dental depot raises an objection on account of its present mahogany colour. Another objects, because it is *India-rubber*, and is generally considered by "our most influential citizens" as a very common and cheap article, too much so to be put in the mouth. A third gives it the *humbug* direct, and declares it to be of no use to the profession; because every one, in town and village, cannot afford to have a boiler and apparatus for vulcanizing.

The facts touching these objections, are none the less true to a limited extent, notwithstanding the source from which they emanate. But, let every dentist become a patient, with a set of artificial teeth in his mouth, cheoplastic, blocks on gold, continuous gums, or what not, and afterwards change them for a set on vulcanized rubber, and he would, if sincere to his patrons, soon find a way to obviate all the objections which have been or can be brought to bear against it; and I shall be prepared at any time, to establish beyond all reasonable controversy, what is herein set forth.

THE VULCANIZING PROCESS has now become so simplified, as to be within the reach of all. I have had constructed for dentists a small steam chest, in which four sets can be vulcanized at one heat, and is so arranged as to be readily attached to any stationary boiler in a manufactory or workshop, the cost of which is no more than 30 ds.

THE FOLLOWING INSTRUCTIONS will be sufficient for those wishing first to try the material. Arrange the teeth with wax upon a gutta percha or lead plate, the thickness desired for the rubber, say about double the thickness of ordinary gold plate, to be first pressed over a small, thin plaster model of the mouth. Then trim the wax inside and out of the teeth, to represent the amount of rubber required, and send the plate, wax and model, to any of the dental depots in this city, or their agents, with 12 ds., and the piece will be completed for use.

Should parties sending prefer to polish their own work, the charge will be only 8 ds. These charges cover the commission to Mr. Goodyear for his right in the rubber material.

Half price will be charged for partial plates, of less than seven teeth, all of which will be returned the day following their receipt by mail, or as otherwise ordered.

TO POLISH THE WORK.—Use, first, a coarse file; second, emery paper, coarse and fine; third, fine pumice stone and water; fourth, chalk or whiting with water; and lastly, a silk or velvet buff, with dry whiting.

During the last eight months I have constructed many sets, which I call the "continuous gum in Rubber," and which in the minds of many is peculiarly worthy of the highest consideration.

A narrow plate of platina is used, on which the teeth are

arranged, soldered, and the continuous body and gum applied, after which the rubber is vulcanized upon the piece (which is but a continuous block) covering every part but the teeth and gum. This style, however, will require more time to repair in case of accident, but thus far I have not had the experiment to make.

In my practice during the last twelve months, which is wholly artificial work, and almost entirely upon hard rubber, I have had but two cases to repair, each being gum-teeth, the tooth in each instance splitting, and leaving a part of it in the rubber. These repairs are made by simply cutting away sufficient rubber from the broken tooth, to form dove-tail grooves for new material, and a new tooth replaced, when the whole is subjected to a steam heat as before, and without the slightest change to the set or fit of the whole.

About one year ago, I explained to Dr. Miles, of New York, several styles of teeth required in the rubber work, at which time he shewed me patterns of specimens, which he had already ordered to be made, consisting of a groove and dovetail on the inside, securing each tooth in the set; also some section sets with holes and grooves.

These teeth have proved to be admirably adapted for the purposes designed.

VULCANIZED RUBBER, USED TO CORRECT THE IRREGULAR GROWTH OF TEETH.—The following case, which I have recently regulated, will, perhaps, best elucidate this new use of hard rubber.

A young lady of twenty-one years of age called, having the two superior centrals projecting into the mouth the thickness of the teeth from the position they should stand. One was also overlapping one-third the crown of the other, and both standing obliquely, or nearly sideways in relation to the adjoining teeth. The other teeth in the upper jaw were regular, none having been removed. After a little forced separation with wedges, I made from an impression of the palantine arch, a plain rubber plate, which fitted closely against the anterior crown of each bicuspid and molar, right and left. An allowance was made, so that the rubber would press against the inside corner of each central before touching the roof under the front part of the plate, and also in closing the mouth, that the full force of articulation would be directly upon this point. A gold pin was rivetted to the front part of the plate in such position as to stand upright between the centrals, and thus to prevent them closing together.

Other fixtures, springs, &c., were readily rivetted and adjusted, as the progress of the case demanded, until the two teeth, at first so deformed and irregular, had assumed their proper position in the arch, and instead, an open and free expression was given to those and the adjoining ones, not even anticipated by the happy patient, or her delighted friends.

VULCANIZED RUBBER NOT GUTTA PERCHA.—All that was ever claimed by those who fully understood its properties, has been realized by both dentist and patient.

For *temporary use* it has been worn with satisfaction, when well made, until the gums were ready for more permanent work.

The fact that this material could be softened in water at seventy degrees, was sufficient evidence, that one year's use in the mouth was all that could be anticipated from it. But when the process of hardening the rubber is considered, the degree of heat to which it is subjected (310), the solid and firm shell finish which it receives and retains, and yet the same ease and adaptation preserved to the wearer as in gutta percha; then it is, that the character and elements of the rubber, are clearly and fully shewn.

Whatever may be the opinion of dentists regarding the economy of time, or the character and expense of material used in the manufacture of any particular style of Artificial Dentistry, our *patients* will be the final judges; and that which is worn with the greatest comfort, and renders the greatest service in strength, neatness, and durability, will and must be adopted for general use.

VULCANIZING FLASK.—In December 1856, I constructed a pattern, and had cast an iron flask in three sections, which is now indispensable in the process of preparing moulds, and vulcanizing the rubber around sets of teeth. This flask has also proved to be quite as indispensable in another branch of Dentistry; and I take this opportunity of offering it to the profession without any restrictions of a patent.

In connection with this subject, I state, for the benefit of those it may concern, that a combination of plaster and pulverized soapstone, the latter one-third, makes a neat and smooth mould, and will not shrink or crack in the process of drying.

Another use of this soap-stone will be found highly advantageous in making moulds for metallic dies:—

Mix of it one-third to one-half with moulding sand. This mixture requires less moisture in the moulding process, and has the desired smooth surface, also parts more readily from the model than clear sand.

HOSPITAL CASES.

REMOVAL OF A PORTION OF THE LOWER JAW.

By W. Vesalius Pettigrew, M.D., F.R.C.S.

Mrs. A. A., residing at Roby, Lancashire, aged twenty-six, married, and of lymphatic temperament, three years and a half ago experienced pain in the further molar tooth, on the right side of the lower jaw. The pain continued for a month, and then a small abscess presented itself, corresponding to the fang of the tooth, on the outer side of the gum. This abscess was opened, and for eighteen months after, pus could at all times be pressed out. Shortly after the abscess was opened, the tooth was removed by Mr. Berrend, and the fang corresponding to the abscess was found denuded of its periosteum and diseased. The pain was partially relieved for a few weeks, but afterwards returned with severity, and at the end of eighteen months, Mr. Bickersteth, jun., with Mr. Alty, determined to ascertain the cause of an enlargement, which had gradually been taking place from the outer and back part of the angle of the jaw, considerably protruding the cheek itself. Upon cutting down from above, the knife sank into a large cavity, from which escaped about a dessert-spoonful of pus and a great quantity of blood, and at the bottom of this cavity the crown of a tooth was felt. This tooth, which proved to be the dens sapientiæ, was with very considerable difficulty removed, a piece of lint afterwards placed in the hollow, and replaced as occasion required for the next thirteen months. The operation was followed, I am informed by Mr. Alty, with very great swelling of the integuments, the formation of an abscess under the jaw, fever, and delirium, all which symptoms, however, succumbed to the usual remedies in such cases. On the 10th of April I was requested to see Mrs. A. at Roby; and, upon examination of the right side of the lower maxilla, found a considerable enlargement of the side and angle of the

bone, apparently composed of a thin crust, extending backwards. The two plates of bone appeared widely separated by a spongy-looking tumour that occupied this space, pushing the tongue underneath the teeth of the other side. The dens sapiens and two molar teeth were absent; there was no fœtor about the breath, but, of course, a difficulty in masticating food, also in deglutition and articulation. I had no hesitation in saying, that removal of this portion of the jaw was the only measure that could be resorted to, for which purpose Mrs. A. came to London, where, in consultation, my opinion was confirmed by my friend Mr. Fergusson.

In the afternoon of May the 11th, Mrs. A. being placed under chloroform by Dr. Snow, who was most successfully enabled to keep up the influence of that anæsthetic the whole time of the operation, I proceeded to remove the mass of disease in the following manner:—

After taking out the nearest bicuspid tooth, I made an incision immediately below the commissure of the lip, down to the margin of the jaw, and then as far as the edge of the masseter muscle, avoiding the facial artery; and after reflecting the flap, and incising the gum within and without, I proceeded to divide the maxilla with Mr. Fergusson's saws, three or four in number; and great as this number may appear, still, with good assistants, little more time is lost than if one only was used, and there is a great advantage in using the graduated-sized saws. I have since, however, constructed a strong saw with a moveable back, which I find practically most fully answers the purpose of the four saws. Having severed the bone, I next continued my incision up to the front of the ear, cutting upon the lower margin of the maxilla all the way; the flap was then reflected over the face—the masseter, parotid, and everything else that was in the way, dissected off; and finding the tumour extending but a short distance up the ramus of the jaw, I sawed the bone just below the coronoid process; having done this, I separated the lining of the mouth, the buccinator and internal pterygoid muscles, and removed the mass of disease at once. Finding the separation of the plates of bone extending into the coronoid process and neck of the condyle, it was thought advisable to remove the bone at the socket: this was easily effected by forcibly drawing down the coronoid process by means of the lion forceps, carefully detaching the temporal muscle from its attachment, also the external pterygoid from its insertion, making an incision into the external lateral ligament of the joint, and, with a twist, detaching the bone from its socket. The arteries

and veins, about fifteen in number, were then tied, the divided portion of jaw carefully examined, the flap turned back, and brought together by five or six sutures, all the ligatures allowed to pass out of one pending opening, and the patient allowed to remain quietly for several hours upon the sofa, a little port wine and water being occasionally administered. At night, twenty drops of liq. opii sedativ. were administered. The next two days there was, from time to time, considerable nausea, with much thirst, but no fever, the pulse being seventy-six, and the skin moist.

Upon examination of the tumour and bone it was found that the walls of the maxilla were widely separated, the outer presenting much the appearance of a spina ventosa. The tumour, which occupied the space and bulged up from the alveoli into the mouth, was lobulated, sprung from the base of the bone, and was of a fibrous gelatinous nature, but not malignant. The very rapid recovery of the patient after so formidable an operation I attribute to at once well supporting her with stimulants and nutritious food; not allowing her to be kept in bed above two days, and getting her into the air as soon as possible; not at the same time forgetting that I had to treat a lady endowed with the most indomitable courage. Previous to the operation Mr. Samuel Cartwright constructed an ingenious instrument. This fits upon and fixes the teeth of the upper and lower jaw of the opposite side, for if not occasionally steadied there becomes a disposition for the teeth of the left side of the lower jaw to be retracted and drawn beneath those of the upper. This instrument answers its purpose admirably.—*Medical Times and Gazette.*

OPERATION FOR CLEFT PALATE.

The following operation has been performed by Mr. Haynes Walton, at St. Mary's Hospital. A youth was brought into the theatre of St. Mary's Hospital to be operated on, and Mr. Walton very judiciously before commencing, allowed those who were within seeing distance to examine the throat. The cleft commenced just behind the centre of the roof of the mouth, and passed through the hard and soft palate to the top of the uvula, the merest portion of which remained undivided, and formed a transverse band between the sides which were much separated. Mr. Walton mentioned to the class his determination to treat the soft palate only at first, and subsequently

to attend to the remaining portion of the fissure : also, that he would endeavour to save the tag at the end of the uvula, as he regarded the connexion, although slight, to be valuable. The patient was but just fifteen years old—one of the youngest we have seen operated on ; yet his resolution was astonishing, for he scarcely flinched. The ordinary operation of Mr. Fergusson's was performed.

In some after remarks, Mr. Walton alluded to the more than ordinary difficulty experienced in dividing effectually the levatores palati muscles, because of the curtain on each side being held together, and to the greater care required to pare the lower edges of the fissure in endeavouring not to cut through the slight connexion of the uvula. He expressed his faith in the advantage of doing but a little at a time, believing it far better, according to the circumstances, of the case, to make two, three, or even more operations, than to attempt to effect a great deal at once ; sloughing of the edges, or even non-union, being the common result of over operating. He begged to draw attention to the manner in which he had applied the last suture. Having put in a certain number after the peculiar method demanded, when the edges are yet apart, he thought that another was wanted, and with the tenaculum needle he passed it continuously through to the side of the palate without any difficulty, although he had been led to regard such execution as unpracticable, and undertook it with doubt.

The operation was performed on Wednesday, the 10th of May, at two o'clock ; and on Friday, at the same hour, all the sutures were removed. It is a theory of Mr. Walton's, that sutures are generally kept in too long after all operations. He generally removes them by degrees, from day to day. Here, when he took out one, intending to withdraw it, he found the wound so well united that he freed it from all.

Complete success followed this first essay. A fortnight after, on the 24th of the month, the remaining portion of the cleft, including a part of the soft palate was operated on. Much time and care were given to separate the numerous membranes around from the palatine arch without unnecessarily injuring it, and at the same time not to detach more than was actually needed. On this occasion the sutures were removed equally easily, and union was effectual. The lad left the hospital in the next week, already a little improved in speech, and altogether freed from the other inconvenience often experienced while eating or drinking.—*Lancet.*

CANCER HOSPITAL.

Deformity of the Face from Lupus Vorax.—The following is the picture presented by a short man, Joseph P——, aged seventy years, at the Cancer Hospital, on the 26th May:—A large but healthy-looking ulcerated cavity on the right side of the nose and face, extending right back to the fauces, the upper teeth being exposed. The entire nose to the right of the septum is destroyed, as is also the cheek, malar bone, and corner of the eyelid; although the eye is perfect, fully the right half of the upper lid is gone; the disease seems to have stayed itself at the alveolar ridge of the right side of the upper jaw, but has destroyed all the structure behind the affected part, thus giving a frightful appearance to the face. Externally there is no offensive discharge, and the surfaces of the sore look healthy. It commenced fifteen years ago as lupus, and was arrested ten years since at St. Bartholomew's Hospital by Mr. Stanley and Mr. Wormald with the application of the chloride of zinc; it broke out again a year afterwards, and slowly and progressively destroyed the various parts described. He was ordered a pint of porter and two glasses of wine daily, and plenty of good food; carrot poultice every night to the seat of disease, and during the day a lotion of an ounce of the muriatic tincture of iron to a pint of water, to get the surface if possible to skin over. This lotion to be very assiduously applied. On the 8th June, he was much improved, the ulcer seemed dryer, and was healing up at the margins, the roots of two or three of the teeth were exposed through the alveolus. His general health was better. A fortnight later the disease seemed to be stayed, and the healing up of the margins, so far as could be expected, had ensued.

A second case of lupus, but of the variety known as non-exedeus, we saw on the 9th June, in a female aged 29, of nearly two years' duration, which had destroyed the skin of the whole of the middle of the face and the end of the nose. It at one time resembled a honeycomb, and was now just about healed up under general tonic treatment and the use of a black wash. She had been under treatment since April 1856.

Congenital Deformity of the Lip in an Infant.—A rather unusual deformity was seen in a child, five weeks old, at the Royal Free Hospital, on the 6th of July; it consisted of a prolongation of the lip into the left cheek, evidently depending upon some disease in

utero—possibly syphilitic, as the child had a suspicious rash about the body. The margins of this fissure in the cheek had no fibres of the orbicularis oris muscle in connexion with it, there being merely a separation of the fibres at the angle which thus permitted the large fissure to exist. Chloroform was administered at this date, when Mr. Wakley pared the edges of the fissure to the proper angle of the mouth, and brought them together by pins, with the best results. We have frequently had occasion to speak of early operations in children; we heard Mr. Wakley say he had remedied a double hare-lip in an infant twelve hours old, the mother not having seen the deformity. We know that Mr. Fergusson has operated as early as three days. On the 4th of July, we saw him perform the operation for hare-lip, on an infant eight days old.

NECROSIS OF THE LOWER JAW FROM THE FUMES OF PHOSPHORUS.

Mr. W. Curran, House-Surgeon to the Royal Free Hospital, reports the following Case in the *Lancet*.

Edward E———, aged twenty-eight, a lucifer match maker, of healthy parentage, stout and muscular, of florid and unexpressive aspect, and uncleanly habits, was admitted on the 4th of June, under the care of Mr. Thomas Wakley. He states that he has been engaged for the last seventeen years in the above calling; he was of quiet, abstemious habits, and good substantial living; has never had syphilis, fever, or other severe ailment, and does not remember being ever troubled even for a day with any complaint affecting his general condition, or involving the necessity of abstaining from his usual duties, until two years ago, when he began to suffer from some passing uneasiness in the lower jaw of the left side, for which he applied at this hospital, and was ordered some gargle and medicine, which afforded him much relief. This recurred with greater severity, becoming more persistent and troublesome, accompanied with nightly aggravation of suffering, and some occasional fœtor of breath. He betook himself to St. Bartholomew's, and there was relieved from time to time of several teeth, and treated otherwise with poultices, gargles, and "bitter meditines." After wandering about for a long period, indifferently clothed, and obtaining a poor, eleemosynary subsistence

as best he could, he applied at St. Thomas's Hospital, and was admitted under the care of Mr. Solly, in a very feeble and tottering condition, from which, however, he was soon recovered by the liberal allowance of support and stimuli, with which that gentleman, he says, freely indulged him. As soon as his condition would permit, a portion of the ramus and body of the lower jaw was removed by Mr. Solly, as far as the second molar tooth. As he was not allowed the use of chloroform, the process was very painful, and so influenced his mind in its favour as to make him regard another operation with dread, and stipulate for its exhibition as a *sine qua non* on any future occasion. He remained under treatment for more than three months in St. Thomas's, and was then obliged to become an inmate of a workhouse, where he resided for eight or nine months, not being under any treatment during that time, though frequently complaining of pain—and showing, by the offensive odour of his breath, and constant smelling discharge, that decay was advancing towards parts essential to life.

Being somewhat erratic in his movements, and fond of change, he was again encouraged to seek relief at another hospital, St. Bartholomew's, where he was under treatment for some weeks. He some time afterwards came here, and was admitted, presenting an appearance of suffering and misery rarely met with. On admission, he had a very bloated and forbidding look, the face being swollen, puffy, and œdematous; the lower lip pouting and enormously depressed, and the upper prominent, bulging, and very red. There was considerable swelling and tumefaction under the jaw, to which a probe could be easily passed through numerous unhealthy fistulous tracks. Large, irregular, and puckering cicatrices, existed on the right side, and copious, very offensive discharge, of a fœtid odour, passed out from the opposite side. The jaw itself and lips were covered with some blackish, slimy stuff, and the smell from the breath was quite intolerable. He was put on a mixture of chlorate of potash, muriatic acid, henbane, and bark, had his mouth frequently washed with a strong solution of liquor of the chloruret of soda, was kept very clean, had the discharge encouraged by soothing applications, and given as much support as he could partake of.

On the 12th of June his appearance and general condition were so much improved as to admit of the following report:—The fœtor of the breath has considerably diminished, the discharge is also decreasing; the outline of the face is more symmetrical and *human*,

and he is in other respects very markedly improved. On the 18th the improvement was more obvious and progressive; there was almost complete immunity from the pain of which he complained about the jaw, and thence downwards towards the sternum; walks about freely; converses with, and does little offices of kindness for his fellow-patients, and is very hopeful of a favourable result.

June 24th.—He is still better; the discharge is less fœtid; the pulse is steady, soft, and natural; sleep good and refreshing; is always ready for food, the solid parts of which he is obliged to *bolt*, in consequence of being unable to masticate them, and this he always does with great ease and peculiar gusto. He has repeatedly asked for an operation, but says he is determined not to submit to any more cutting without chloroform, and professes his willingness to undergo any amount of suffering and inconvenience, however prolonged and unmitigated, rather than again encounter the *conscious* horrors of his former trial.

Under these circumstances, Mr. Wakley, anxious to remove the cause of so much irritation and mischief, and also to avoid unnecessary opposition to his wishes on the score of the anæsthesia, allowed its exhibition; and on the 29th of June, when the patient was fully under the influence of chloroform, he proceeded to remove the remainder of the lower jaw as follows:—An incision was made, commencing at the neck of the jaw on the left side, running downwards along the inferior margin of the ramus and body towards the chin, and continued from the chin upwards through the mesial line, through the centre of the lower lip. The flap thus formed was detached from the subjacent structures, and held upwards whilst the lower jawbone was completely dissected out. It was then sawn through just below the neck, and entirely removed, with several portions of the new shell around it. Some of these were detached and diseased, and it was thought advisable to remove them, as likely, if left, to incommode the process of healing. The old sawn portion of the jaw, an inch to the right of the symphises, corresponding to the dental foramen, was found to present the same appearance as on the day when Mr. Solly operated, and the whole of the bone, with the exception of that at the neck, was quite dead, in a completely necrosed condition, and smelt horribly. At an early period of the operation, when the flap of the cheek was raised, a ligature was passed through the tip of the tongue, and that organ was carefully held out of the way by Mr. Gant, as well as being prevented slipping backwards during its performance.

Notwithstanding that the facial artery, and some other vessels, were timely secured during the operation, a good deal of blood was unavoidably lost, partly depending upon the very vascular condition of the soft structures, but principally from a branch of the sublingual, which was divided. The parts were then brought together by sutures, and the deformity, from the still swollen size of the face consequent on the removal of the bone, was but trifling. The patient, who had been pretty well under the influence of chloroform the greater part of the time, now rallied, and was conveyed to his bed. He was allowed a little wine, and remained that day without a single bad symptom, sleeping soundly during the night. This was followed by even greater improvement, and freedom from the slightest uneasiness the day following the operation. He has gone on satisfactorily ever since the operation. Complete union by adhesion occurred on the third day. He is now convalescent, takes plenty of nouriahment, and articulates in speaking perfectly.

Partial Blue Line of the Gums in Lead-Colic.—In a case of lead-colic in a young female (an operative from a white-lead factory), in the Royal Free Hospital, Dr. Brinton drew attention to the very partial character of the blue line on the dental ledge of the gums. The teeth were quite clean and free from any decay; in fact beautifully healthy. The lead line was limited to three of the four incisors of the lower jaw. The case was severe; but, as usual, yielding at once to appropriate treatment. Dr. Brinton regards the blue line as the *sulphuret* of lead, and hence as produced by a deoxidation of some salt of lead; but the mode of deoxidation seems to him doubtful, perhaps even variable. He states that in ordinary lead paint, or glazed cards, it is easy to see that the minute quantity of sulphuretted hydrogen present in the air quite suffices slowly to form a sulphuret; and it is equally certain that the larger amount of this gas often present in many parts of the digestive canal exerts a still more energetic action of the same kind on salts of lead taken into it medicinally. But in the case of the blue line around the dental edge of the gum, that this deoxidation is effected ("conditionated") by the teeth, is shown by its abrupt cessation where the mucous membrane has closed over an extracted tooth. He therefore inclines to conjecture that the lead is derived from the saliva; and deoxidized possibly by vital action in connection with the chemistry of the teeth, but probably in still greater degree by an absorption and concentra-

tion of the saliva retained in the groove of the gum, followed by an exposure to the sulphuretted hydrogen of the air, or to that of its own decomposition. The analysis of the saliva in lead poisoning would, Dr. Brinton thinks, test this view, which in the meantime certainly has the merit of explaining most of the varieties of lead line he has hitherto seen. In the above case, for example, he should conjecture that the limitation of the blue line to the undermost incisors was determined chiefly by the exposure of these teeth to the external air—an exposure brought about by a slight peculiarity of the patient's mouth.

EXTENSIVE DISEASE OF THE BONES OF THE SKULL.

Mr. Lane communicated the following to the "Western Medical and Surgical Society."

The patient, a female, contracted syphilis from her husband, and subsequently suffered from ulcers on the legs, eruptions on the skin, ulcerating node on the forehead, and destructive ulceration of the septum nasi. She was admitted into the Lock Hospital during July 1856. She was then much disfigured by extensive ulceration on her face, and consequent exposure of bone, and by ulceration of the eyelids and lips; the external parts of the nose had disappeared, and the right eye was opaque, the left being destroyed by sloughing of the cornea a few days before admission. A large portion of the os frontis was dead and exposed, as were also the alveolar processes of the superior maxillary bones, opposite the incisor teeth, as well as also the ossa nasi. The interior of the nostril was also involved in the disease, the hard palate being slightly affected, and the soft palate not at all. Other nodes, etc., existed in other parts of the body. She was treated generously; took quinine, nitric acid, sarsaparilla, and iodide of potassium. All her bad symptoms improved under this treatment; the ulcerations of the cheeks and lips cicatrized, and the dead bone loosened by degrees, but did not separate until December. On the 25th of that month, the whole of the dead bone fell in one piece from its position, it consisting of a large portion of the entire thickness of the os frontis, the entire ossa nasi, and the ascending nasal plate and alveolar process of the left superior maxillary bone. The dura mater, thus exposed, was healthy, except a small portion outside the frontal eminence, which was of a dirty-white colour, and evidently bereft of its vitality. This slough soon separated, and the subjacent portion o

brain protruded. This hernia cerebri, in a short time, measured two or three inches, and was about the thickness of two fingers, and reached nearly as low as the angle of the mouth before it was excised. Other protrusions succeeded, consisting of dirty-white pulpy substance. This cicitrization proceeded for some time, and no brain symptoms occurred; yet, on the 8th February 1857, paralysis of the right arm and leg occurred. The brain then ceased to protrude, she became comatose, and on the 17th she died.

After death, the dura mater, forming the margin of the opening, through which the hernia cerebri took place, had formed adhesions with the arachnoid, so as to close the cavity of that membrane. The convolutions and their membrane were healthy; but on slicing down the left hemisphere to the level of the left lateral ventricle, it was found excavated in its anterior lobe, from the external wound backwards into the left ventricle. This excavation was funnel-shaped, the base being at the external wound, and the apex opening into the ventricle. The whole of this track had a sloughy boundary of a dark-brown colour. The corpus callosum seemed softer and slightly yellower than natural.

CHEMISTRY.

ACTION OF IODIDE OF POTASSIUM.

Dr. Sieveking read a paper upon this subject; he remarked, that of the remedies we owe to the advancement of modern chemistry, none had obtained a higher place in the estimation of medical men than the iodide of potassium. There might be some difference of opinion as to its efficacy in this or that class of disease, or in individual cases; but its general utility as a member of the pharmacopœia was undeniable. Rarely producing any unpleasant effects, and unless administered with culpable carelessness, never giving rise to disturbances in the system of a dangerous and permanently injurious character, it might be classed among the safest and most beneficial remedies we possess.

Dr. Sieveking observed, that the unpleasant symptoms produced at times by the remedy were easily avoided or corrected, either by altering the doses, or by persevering in the use of the agents, and then briefly reviewed the general therapeutic effects of iodide of potassium. He observed, that according to the disease in which it was

administered, or according to the theory in vogue, it might be called an alterative, an eliminant, or a tonic.

Dr. Sieveking, guarding himself against the imputation of attempting to exhaust the subject in a single paper, stated that he wished to bring certain cases and statements before the Society, to show the threefold action of the remedy. 1st, As an evacuant of excessive morbid secretions. 2nd, As an antidote to organic poisons. 3rd, As an antidote to and eliminant of inorganic poisons. With regard to the first class, the author stated, that although the iodide might be shown to act mainly as a diuretic, it could not be placed in the same category as those agents which operate solely by promoting copious secretions, as the amount of fluid discharged in consequence of its exhibition did not always bear a definitive ratio to the intensity of the disease, and the quantity of morbid accumulation in one of the cavities; while acting as an eliminant it also appeared to correct the morbid condition of the blood and the vascular system which primarily induced the disease. In illustration of the more exclusively eliminant action of the iodide, Dr. Sieveking brought forward a case of hydrothorax of an aggravated character, in in which the speedy cure appeared exclusively due to the salt in question. The author also referred to the eliminative power which iodide of potassium appeared to exert in hemorrhagic effusion of the brain. Under the second head Dr. Sieveking spoke of the action of iodide of potassium in counterbalancing and removing the organic poisons, which appeared to constitute the materia morbi in numerous diseases. He adverted to syphilis in its different forms, to various scaly and other forms of skin disease; and brought forward cases in illustration, cases which, however, he admitted to be incomplete as proofs, on account of the iodide not having been the sole remedy administered: he urged that the conviction which a multitude of small experiences wrought in the mind of a practitioner, could with difficulty be illustrated by solitary instances of so complicated a character as many of the diseases which might be classed under the second head. In the third head the author explained his views with regard to the action of iodide of potassium in the case of the various affections resulting from metallic poisoning. Cases of lead poisoning were brought forward, and a well-marked case of mercurial poisoning was also quoted, in illustration of the value of the iodide in such cases. Dr. Sieveking adverted to the importance of a correct diagnosis in cases of lead poisoning, as symptoms, which otherwise might induce a most unfavourable prog-

nosis, would, when regarded as the result of saturnine intoxication, justify a much more favourable view. The difficulties attending the detection of lead in the urine, where it was manifestly being eliminated from the system, were adverted to, and it was suggested that probably, at times, some, if not all, the lead was evacuated by the intestinal canal.

Dr. Sieveking concluded by observing that he had by no means alluded to all the various forms of disease which called for the exhibition of iodide of potassium, but that he had merely desired to submit to the consideration of the Society some of the opinions which practical experience had induced him to form relative to the drug, and to elicit from the stores of observation of the members further illustrations in regard to its uses and effects.—*The Harveian Society.*

THE SOLVENT PROPERTY OF GLYCERINE.

Mr. Haselden in a communication to the *Lancet*, states that the especial property which glycerine possesses of dissolving the disulphate of quinine would alone be sufficient to render it an object of interest, but it is equally powerful with many other substances. It readily dissolves the disulphate of quinine in the proportion of two grains to the fluid drachm, forming at first an opaque fluid, which in the course of a few hours becomes a clear bright solution, possessing the peculiar pale blue superficial tint peculiar to the solutions of that substance, and this without the aid of heat or any acid. This solution is miscible with waters and tinctures in various proportions, and it appears a great advantage to possess a clear, bright, elegant, and by no means disagreeable solution of the disulphate of quinine, without the addition of acid. Gallic acid, which requires one hundred parts of cold water for its solution, is soluble in rather less than twelve parts of glycerine, making a clear, straw-coloured liquid, of a pleasant, sweetish, sub-acid taste, in this state offering a desirable mode of administering the gallic acid where pills might be objectionable, and a large quantity of fluid impracticable.

Tannic acid is also freely soluble in this substance, and as an external astringent application might prove preferable in many instances to an oily or greasy compound. In the treatment of hemorrhoidal affections, it may possibly offer, as an application combined with opium or the salts of morphia, some advantage over the reigning pre-

paration—unguentum gallæ compositum, it being more tenacious, and at the same time lubricating, and when combined with the salts of morphia, in place of opium, it possesses the decided advantage of not staining the linen.

The hydrochlorate and acetate of morphia are readily soluble in glycerine, making a clear, limpid solution of a slightly yellow tinge, forming, as it were, a kind of syrup, which might possibly prove in many ways useful in the hands of the profession.

Glycerine also dissolves the ferri et quinæ citras, in the proportion of five grains to the drachm, forming an olive-yellow-coloured liquid peculiar to the solutions of that salt.

There are other substances which glycerine eminently possesses the property of dissolving in a larger proportion than any other known fluid, but sufficient has been said to introduce the subject to your readers.

Iodoform, discovered by Serullas, has been shown by Dumas to be composed of three atoms of iodine, two of carbon, and one of hydrogen. M. Bouchardat has given, in his Manual of Materia Medica, a ready mode of preparation, and it is expected that iodoform, from its agreeable taste and non-irritative action, will render great services where iodine is indicated. M. Rhigini of Oleggio (Italy), has made some experiments, to ascertain whether iodoform possessed any anæsthetic properties. He found that it had some narcotic powers, but considerably inferior to chloroform or ether. M. Bouchardat has therefore given the following formula for an ointment to be used in cases of painful cancer; cerate, eight parts; iodoform, one part; laudanum, one part. Thirty grains of iodoform made into thirty-six pills with extract of wormwood, will afford an agreeable way of administering the remedy. Dose three a day, increased to six or eight, in cases of glandular swellings and other scrofulous affections. M. Bouchardat advises the following proportions for the preparation of iodoform: iodine, 100 parts; bicarbonate of potash, 100; water, 750; alcohol, 250; mix the whole in a strong bottle, and place it in a water-bath, the temperature of which is to be gradually raised, to favour reaction. When the liquor becomes transparent, add twenty-five parts of iodine, heat again, and go on adding iodine as long as the fluid loses its colour. When the liquid shall no longer change with heat, add a few drops of a solution of caustic, potash, or soda, to remove the colouring of the fluid. Filter, and wash the precipitate

which will consist of crystalline plates of iodoform, of a beautiful citrine colour. The mother liquor will, on evaporation, yield crystals of iodide of potassium or sodium. The reactions during the process are the same as those which take place in the preparation of chloroform.

THE DENTAL MOVEMENT.

The anniversary of a day, which must be for ever memorable in the dental body, is fast approaching. The great movement which has formed a new era in the history of the dental profession, will soon have passed through its first year; and the question arises, "how ought its anniversary to be celebrated?" The ordinary English response would, perhaps, be "by a Dinner at Blackwall, or some other place where dining parties 'most do congregate':" for, somehow or other, there is in the British mind, an inseparable connexion between anniversaries and dinners. Several of our most respected correspondents have suggested "an entertainment," at which the *whole* profession should assemble—collegians and odontologicals, and those who up to this have been "outsiders:" we, of course, mean "outsiders" only in the sense of regular practitioners who have not joined either society.

Now, though we are decidedly of opinion, that there has been too much "fighting" amongst the members of the profession, we very much question that the "feasting" ought yet to commence. We regret very much that in discussions in which the disputants ought to have had but the one object in view, so much personality should have been introduced; and cannot but think it unwise of the organ of the Odontological Society, to have admitted into its columns so many vindictive *anonymous* communications. We have from the first set our face against abuse. The capacity of being

personally offensive is the lowest order of ability; and its exercise is a display of certainly the worst possible taste.

We should, therefore, be delighted to see a truce between the belligerents. A very brief application of common sense, unmixed with professional animosity, would be sufficient to lead to lasting concord amongst dental practitioners, and to the formation of one united educational body.

We by no means acquit the Members of the College of Dentists of all blame in the unseemly disputes to which we refer; for we have with pain read in medical journals intemperate and ill-judged letters from some of those gentlemen, reflecting upon men who have passed from amongst us. These communications were not, however, anonymous.

We do not charge on either the Odontological Society or the College of Dentists the sins of their respective members. So far from that, we make all due allowance for the difficulty which those who hold the helm, have in the management of a professional crew; but we do, in the strongest terms, condemn those, who, in their zeal to serve the interests of the party with which they allied themselves, have lost sight of the object which all should be anxious to achieve; namely, the placing of the dental profession in its legitimate *status*.

The exertions of those who have acted in this injudicious manner, have resulted only in calling forth personal bickerings, and exciting individual jealousy, and so retarding the general interests of both societies.

It is as clear as light, that it would be for the interest of both bodies, and of the dentists of Great Britain, Ireland, and Scotland, that the Odontological Society and the College of Dentists, should amalgamate, and become one united body. If any person believe the contrary, we should feel much indebted to him for a little argument to warrant his opinion. We rather think no Member of the Council of either Society agrees with him. We certainly never met with a respectable den-

tist who did think there was the smallest reason why two such bodies should not become one.

Both owe their origin to the same profound conviction in the minds of the profession, that they had not socially the *status* to which such an ancient calling, and one requiring such a high amount of training, entitled them, and that it was necessary for them to, at once, bring about a change. How is this to be done? "By educating our members up to a certain standard, and procuring for them such a diploma as will be a guarantee to the public, and a barrier against charlatanism." This is the reply of both parties. Then wherein lies the difference between them? Merely in details: details which, as we unhesitatingly aver, could be arranged to the satisfaction of both, by a conference of a few hours between the leading members. Concessions should of course be made on both sides. Every matter of this kind must be one of concession. Dental pupils must in their speciality, be examined by members of the dental profession. There are now no gentlemen at the Council Board of the College of Surgeons capable, even if they were willing, of examining pupils in the departments of practical dental surgery, dental mechanics, etc. But again we repeat, these are matters of mere detail.

Should, then, some fifteen hundred, or two thousand, dentists, allow questions which vitally affect their professional prosperity and *status* to be lost sight of in the squabbles of some half dozen gentlemen, who do not at present seem in a mood for Star and Garter festivities?

The way in which "our first anniversary" should be celebrated, is, first, by letting "by-gones be by-gones;" next by a friendly conference between the Odontological Society and the College of Dentists, which conference we should look on as tantamount to an amalgamation; and *then*, let the celebration come, by all means.

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DENTISTS FOR THE HOSPITALS, ETC.

In our last number there appeared a letter signed "Dens Sapientiæ," which we copied from the "*Lancet.*" In that letter it was stated that the Board of the London Hospital had dispensed with the services of the Surgeon-Dentist, who had been attached to the Institution, and handed over his department to a gentleman who had charge of the pantry. Things may not be as bad in other hospitals, as in the "London;" but unquestionably, the non-appointment of Dentists in connexion with Infirmaries, Dispensaries, Medical Schools, &c. is the general rule, and not the exception.

This is a matter to which the entire Profession should turn their attention. United action can alone be of any avail in such a case. There is no want of argument; but there is required the necessary professional influence, which would be sure to bring arguments home to reluctant governors and managers.

We have received complaints from a vast number of medical students, who very roundly declare it to be a fraud to make them pay for dental instruction which they do not, nor cannot under present arrangements, receive. Some of those gentlemen have written to us to say, that they learned more about the teeth and dental operations from the professional articles contributed to the *Quarterly Journal of Dental Science*, and the transactions of the College of Dentists, published in our pages, than they had ever heard of in their regular hospital-school study. Now does not this show the gross evil of not having dentists appointed to these institutions? First rate men in the medical and surgical professions at home, do not practise on the teeth; they know they are incompetent to do so, and they therefore send to practical dentists such of their patients as require assistance in this respect. But the case is different with army and naval medical officers. These gentlemen, when on Foreign service, are obliged to

operate on the teeth, and many of them have spoken to us of the extreme reluctance with which they felt themselves compelled to perform operations, as to the *modus* of which they were profoundly ignorant.

We might refer to many other illustrations of the evils of the present system; but we believe the leading members of the Profession are quite alive to the necessity of exertion in the matter.

THE EDUCATION OF DENTISTS.

THE complete education of the rising members of the Profession, and the most advisable mode of effecting this, is at the present moment occupying the serious attention of the College of Dentists, and we understand of the Odontological Society also: this is the main object of the establishment of these bodies, and the Profession are anxiously awaiting the publication of the proposed means. English Dentists have long felt the want of some recognised test of their fitness to practise their special branch of surgery. The anomalous position hitherto occupied by them has been so often dwelt on during the past year, that it is quite needless now to advert to it. What the Dentists require, and what the public have a right to expect from them is, that every practitioner shall possess a diploma, obtained after an official examination, which shall be a guarantee, not only that he has been properly educated, but also that he is competent to practise this branch of surgery. The curriculum of education must embrace an attendance at lectures on general anatomy, physiology and surgery, and also the special considerations of these subjects, as they relate to head and neck; therapeutics, materia medica, general and special pathology, the theory and practice of dental surgery, chemistry and the histological and comparative anatomy of the teeth, together with dissection and hospital practice, must also form

part of the education of the future Dentist. The mechanical department of dentistry must, of course, be learnt in the workroom of some competent dentist.

Such a curriculum of education, if carried out in its integrity, cannot fail to raise the status of the Profession by creating a class of Dental Surgeons, who will be an honour and a credit to their body; whilst the ordinary meetings of the members will, by the interchange of ideas, and the friendly discussion of professional subjects, not only strengthen the bond of union amongst them, but also tend most materially to the same elevation.

We would, whilst on this subject, most earnestly impress on the two Societies the advisability of co-operation in this good work. Apart (notwithstanding the good they will do, and good they are doing) they must necessarily often clash—united, it is hardly possible to contemplate the beneficial results. Hundreds of the profession, who will not join either Society as long as this antagonism exists, are holding aloof to see which will be the victor in the race; but if there were an union of the two bodies, the gentlemen would immediately join the movement. We are perfectly satisfied that were the two Societies merged in one, there are but few of the respectable Dentists throughout the United Kingdom who would not at once send in their adhesion.

It appears to us, that on both sides there is much misapprehension as to the motives and feelings of each. Both the Societies are, we honestly believe, actuated by a desire to advance the *status* of the Profession. It is an absurdity to suppose that the leading members can advance their own private interests by the success of either society; on both sides *their* professional *status* has been already thoroughly secured; we, therefore, cast aside at once the idea of personal interest. The motives then being honest and worthy, why the separation?

To effect an amalgamation, let the College and the

Society each depute a leading member to meet and discuss the arrangement of differences, which, by the way, we shrewdly suspect are by no means so grave as some persons may suppose; let these delegates be empowered to make certain mutual concessions; and then let them report to their own Council the result of their deliberations. If this be carried out in a fair spirit, we do not doubt that the Profession will be represented by one Society, in which, as we have before stated, all respectable Dentists will be anxious to enrol their names.

There is no time for such an arrangement like the present, when the educational scheme of the two Councils are under consideration. Should this opportunity be allowed to pass, the barriers to be overcome will be much more formidable when the College and the Society have each, as it were, nailed the colours to the mast, by adopting a system of education for their members. The education of such a profession as the Dental, ought to come from an united body: we therefore earnestly hope that ere long we may be able to congratulate the Dentists of England on being incorporated in one compact, firm, and united association.

The Council of the College of Dentists of England will soon sustain a heavy loss in the person of Mr. Adam Thomson, who is about leaving England to practise in St. Petersburgh. His gentlemanly conduct, together with his sound practical knowledge, and active exertion in the cause with which he is connected, will render the filling up of his seat at the Council Board, a by no means easy matter.

Mr. Thomson became connected with the dental movement at its origin, and was shortly afterwards invited to make one of the Provisional Committee; and from that time he has cheerfully rendered every service at his command. Amongst the contributions to the Museum of the College which Mr. Thomson has presented, may be found two very beautiful

models (superior and inferior) of the mouth of Miss Julia Pastrana, the "Nondescript," who was lately exhibited in London, and which were taken by him only a short time prior to her departure.

In testimony of the regret felt at Mr. Thomson's leaving this country, a few of his most intimate friends and brother practitioners entertained him at the Freemason's Tavern, on Wednesday evening the 14th ultimo, to wish him *bon voyage*, and prosperity in the land of his adoption.

MISCELLANEOUS.

DENTAL MEMORANDA.

By T. Purland, Dentist, Phil. Dr. Surgeon-Dentist to the Mesmeric Infirmary.

Continued from page 204.

"Poor Robin, 1724.

"Artificial Teeth, set in so firm as to eat with them, and so exact as not to be distinguished from Natural: They are not to be taken out at Night, as is by some falsely suggested, but may be worn Years together; yet are they so fitted, as that they may be taken out and put in by the Person that wears them at Pleasure, and are an Ornament to the Mouth and greatly helpful to the Speech: Also Teeth Clean'd and Drawn by *John Watts* and *Samuel Rutter*, Operators, who apply themselves wholly to the said Business, and live in *Raquet-Court, Fleet-Street.*"

"Fog's Weekly Journal, Jan. 4, 1728.

"Gamaliel Voice, in Whalebone-Court, at the lower End of Bartholomew-Lane, Lothbury, near the Royal Exchange, setteth in Artificial Teeth in the most exact Manner, which are so fitted and set in, that they may be taken out and put in by the Person themselves, and are not to be discerned from the Natural: they not only preserve the Speech, but also preserve the Teeth next to them from

loosening or falling out; but those who have Stumps to set them on, may, with the greatest Security, depend upon it, that they will answer the ends of natural Teeth.

"N. B. Those that are at a Distance, and have not Opportunity of coming to Town, may be furnished with any Number that are quite out in Front, if the next be fast: this must be done by sending a Pattern, which he will direct you to do, if they please to send a Letter to him, paying the Carriage by Post, or otherwise."

"Fog's Journal, 1731.

"Dr. Richard Nock's Tincture for curing the Teeth, Which makes the foulest TEETH most beautifully white, at once or twice using; and speedily cures all Disorders of the Gums or Teeth whatever. It gives immediate ease in the most violent Pain, and prevents its return; it preserves the Teeth from growing rotten, and fastens those that are loose; it perfectly cures the Scurvy in the Gums, causing them to grow up to the Teeth again to Admiration; and is exceedingly good for an ill-scented Breath.

"To be had at the Hand and Face near Black-Fryars Stairs; and at Mr. Brook's at the Essex Serpent, in King Street near Covent Garden. Price One Shilling with Directions.

"N. B. Those who care not to use the Tincture, may have their Teeth cleaned and Scal'd, or taken out with a Touch, by the Author, who attends at his House every Day from Morning 'till Night."

[This, like most of Nock's Advertisements, is illustrated with the Doctor's hand holding a pair of forceps—the wrist superbly ruffled—and a face with the mouth open.]

"Fog's Journal, 1732.

"The incomparable Powder for cleaning the Teeth. Has withstood, by its most excellent and known Virtues, the Attempts of many repeated counterfeits; and at present new ones are started up, with the very words of this advertisement, and a Pretence; tho' it is well known to the many Thousands that have used this, that the very first time using manifestly cleans, and whitens the Teeth to Admiration; therefore pray take Notice, that the only true, effectual, and original Powder is sold no where else, but as mentioned below:

It is sent for in large Quantities to the Plantations beyond the Seas, to whom good Allowance is given; and is as effectual in the East or West Indies as in London. [No doubt!]

"It is sold only at Mr. Allcroft's Toyshop at the Blue-Coat Boy against the Royal Exchange in Cornhill. Price 1s."

"DUBLIN EVENING POST, 1734.

"THOMAS ALLAM,

"OPERATOR for the Teeth, who served his Apprentiship to the famous WILLIAM BREACH, deceased, living at the little blue Man and golden Tooth, the corner house but one in Golden Lane, on the left-hand turning out of Bride Street, Dublin; whose experienced judgment in drawing of Teeth is so universally approv'd of, that he need no other Recommendation than his Success, and the incessant Complaints of the many Persons who have suffered by ignorant Pretenders; Of which he cautions all People to beware.

"He therefore promises, entirely to take out such Stumps or broken Teeth as have been left in by other Practitioners, with the greatest Ease and Perfection, cleans Teeth be they ever so foul, occasioned by the Scurvy, which loosens the Teeth and causes an offensive Breath; with proper and sure Directions how to preserve them.

"He has an exceeding good Tincture for fastening loose Teeth, and which often perfectly cures them without drawing.

"N: B: He has likewise the most excellent Dentifrice, which, is the safest Composition extant, for cleaning and preserving the Teeth, The Manner of using it is with Water and a Tooth-Brush, applying it only twice a week, unless the Teeth be very foul."

[Illustrated by a little Man holding a large tooth].

"DAILY ADVERTISER, 1751.

"Advice to the PUBLICK,

"*At the Rainbow Coffee-House near the Royal Exchange, from Twelve to Four o'clock next Saturday, to the Poor gratis.*

"JOSEPH TRINCHY,

"Operator of the Teeth to his Majesty the King of Sardinia, is arrived in this Metropolis.

"HE draws Teeth and Stumps tho' they lay ever so deep in the Gums, without Iron Instruments, or any Powder; his Operation

being performed by the Dexterity of his Hands only, and that without any great Pains. He puts natural Teeth in again, and fastens them without the help of any Gold Wire; after being placed, they retake their solid firmness again, and give not the least Trouble or Uneasiness. He prepares a Root which when applied to the sick Teeth, frees them instantly from all Pain, dissipates the Fluxions, hinders the sharp Humours to fix on the Teeth, and preserves them so as to last a long Time.

"He prepares a Water with Pearls, that cleans and whitens the Teeth, without offending either them or the Gums; or taking off the Enamel as Powders or Opiates generally do. The manner of using this Water is by dipping a little Cotton in it, and rubbing the Teeth with the same; and by its Virtue it will whiten them, and fasten those that are loose, take off the Tarter and make the Gums grow.

"Now lodging at Mr. Janquiere's, a Wine Merchant, in Great Suffold Street, or to be heard of at the Smyrna Coffee-House, Pallmall."

[A very MODEST appeal to the gullability of the Public of 1751.]

"1752.

TO THE PUBLIC.

"A Gentleman has lately discovered an absolute and safe Remedy for the TOOTH-ACH, with all its dangerous consequences, without drawing. His Medicine perfects the Cure in a few Minutes, as can be attested by Numbers of Gentlemen and Ladies of Credit and Character in Town. It is so far from doing the least Damage to the Teeth, that it is an entire Preservator both of them and the Gums.

"☞ The Gentleman is removed from St. Martin's-Court, to the Dove and Slipper, in New-street, Covent-Garden.

"He gives attendance from Ten to Twelve in the Morning, and from Two to Four in the Afternoon."

"PUBLIC ADVERTISER, 1769.

"THE Aromatic TOOTH WATER, invented by CAPPRON, Dentist to his most Christian Majesty, which not only cleanses and whitens the Teeth, but preserves the Gums, nourishes and makes them grow. It eradicates the most inveterate Scurvy, renders those Teeth that are

loose and ready to fall out firm and fixed, preserves such as are sound, and prevents their spoiling. This Aromatic Water has besides the Virtue of curing all disagreeable Smells from the Breath, which is owing to the Scurvy in the Gums and Rotten Teeth.

"Cappron's Elixir for the Tooth Ach assuages and cures the most violent Tooth Ach in a few Minutes.

"Sold only at M. Kippax's Warehouse in Ball Alley, George-yard, Lombard-street, and at L. and D. Bourgeois's, Perfumers, the Upper End of the Haymarket, at 1s. each bottle."

WHAT SHALL BE DONE TO PRESERVE THE TEETH OF CHILDREN?

This is a question of grave importance, and challenges the attention of the physician as well as that of the medico-dental practitioner; and we are not quite sure that the resources of dental hygeia are at present adequate to the exigencies involved in a question of this kind.

So far as local and external causes are concerned, caries of the teeth admits of a clear and satisfactory solution, and a course of treatment, at once rational and effectual, may easily be suggested. But back of all this, and apart from these considerations, lies the hidden trouble, or cause of trouble, which remains to be detected and dragged from its lurking place, where the full blaze of medical science may shine upon it.

The question involved in a thorough discussion of this subject, embraces every consideration connected with the physical development and education of the individual. The digestive—nutritive—simulative and secretory functions in particular are involved, each of which are sufficiently important to engage the attention of the physiologist in its relations and bearings to the subject under consideration. But the discussion of this subject would require a volume instead of a brief editorial, and is, therefore, altogether impracticable in the present case. But may not something be done toward the immediate relief of the many thousands who are now suffering from the premature and wholesale destruction of the dental organs?

The fact is clear, and admits of no disputation, that the teeth of our children are in a condition most deplorable—a condition demanding the utmost exertions on the part of our profession, and the careful and earnest attention of physicians.

When we see the *temporary* teeth of children crumble away and

break down under the influence of caries, leaving nothing but black and unsightly fragments, with jagged edges standing out from the gums, and the gums themselves fretted, swollen, ulcerated and painful, and all this before the first half of the period for which they were intended to serve them is past, we conclude that there is something radically defective somewhere. And yet, so common is this very thing, that neither the parents or medical advisers of these children give themselves any trouble about the matter, save perhaps, during occasional paroxysms of pain with which the child may be afflicted.

And how can it be expected with such a state of things that the rudimentary pulps of the second set shall be able to develop themselves in a perfect and satisfactory manner? The thing is impossible, and the result is just what might be expected, viz. an imperfect development of the maxillæ, and irregular and imperfect dentition. But a crowded and irregular denture is perhaps the smallest of the evils. The teeth themselves are chalky and soft—the elementary structure so exceedingly frail, that, unless watched with great care, they fall a certain and speedy prey to the ravages of caries, before their number is half completed. Indeed, it is no unusual thing to see them decayed before they are fairly divested of the covering; which, by absorption, exposes some portion of the crown already attacked by the destructive action of caries. And the strictest care, as well as the most skilful treatment is necessary to preserve them even to adult years.

Now, what can be done in such cases to prevent such a state of things? Are the services of the dental practitioner requisite, prior to the first eruption? Shall he take charge of the matter as soon as the child is born? Is this trouble purely constitutional, and will it admit of constitutional prophylactic treatment? Or is it the inevitable result of parental neglect and mismanagement—in other words, hereditary as to the child, admitting of no thorough remedy, save as we may be able to treat it through successive generations?

It will be seen that these questions dip deeply into medical philosophy, and general as well as special physiology, and that they involve nothing less than the completest physical education of a human being, as well as the causes, immediate and remote, of the present deteriorated condition of the dental organism.

To a careful and earnest practitioner of our art, the aspect of the human teeth, as presented in the children of the present generation, is truly appalling. Their entire and complete loss, in a large proportion

of cases, seems inevitable. Cases are continually falling under our observation of children from three to twelve or fourteen years of age, where the resources of our profession are taxed to the utmost to save the dental organs, and where nothing but the strictest attention on the part of the parents, coupled with the most delicate professional attentions, can possibly save them from utter destruction. It is some relief to be sure, that artificial substitutes may provide against the more immediate and pressing inconveniences of such a condition—just as an artificial leg or eye will help out under other circumstances; but we confess that our feelings revolt at the idea of children and youth having their mouth filled with these metallic and mineral appendages, when nature has made provision, in this respect, for all their necessities.

These marks of premature old age are scarcely to be found in any other circumstances connected with the development of the animal organism, and we find it extremely hard to reconcile ourselves to the idea that it must be so, in the instance before us.

The hair does not thus prematurely fall from the head. The eyes do not thus early become dim and sightless. The bones are not wont to lose their earthy constituents, and crumble under the influence of molytes ossium. And why should the teeth, which, from their office, nature, and position, should maintain their strength and solidity to the last, thus early crumble and fall by disease? Why should youth be robbed of one of its brightest ornaments, and the human face divested of its sweetest charms? There surely is a sin against nature somewhere, or these things would not be; and if the penalty may be supposed to be proportionate to the offence, we have a right to conclude that it is high time mankind were made to feel their guilt in this respect.

The importance of the teeth is too feebly apprehended, we have reason to believe, even by dentists themselves. They (the teeth) stand in the very vestibule of life. They are related to a series of functions of vast importance, and constitute the first link in a chain of operations essential to existence. If digestion is perverted at the start, how can the result be otherwise than disastrous?—*Dental Recorder, New York.*

ON THE TREATMENT OF RANULA. By M. Gosselin. (L'Union Medicale). M. Gosselin, after alluding to the various modes of treating ranula that have been adopted, and the relapses that are so

common after them, describes the plan he has himself found beneficial. He first of all performs excision, as recommended by Boyer, and then cauterizes with the nitrate of silver. Next day he introduces a probe into the wound, owing to its tendency to close, and repeats the cauterization the day after that. On the third or fourth day he enlarges, by means of the scissors, the aperture, which has become too narrow, and on the following day cauterizes again. After ten or twelve days of this assiduous attention, if, on the introduction of a probe, he finds the cavity is obliterated, he leaves the opening to itself. If, however, a track of a certain extent still exists, he again enlarges the orifice with the scissors. This attention to the case is rarely required beyond fifteen days, when the external opening becomes closed, and the cavity being obliterated, there is no fear of relapse. M. Gosselin has operated in this way in several cases, and in three of these, which he has watched for several years, no relapse has ensued, the opening remaining closed. This plan of procedure has also been extended to various analogous cases, in which there is a cavity with secreting walls, having no spontaneous tendency to approach each other."—*Med. Chi. Rev.*

REVIEWS.

The American Journal of Dental Science. TRUBNER & Co. Paternoster Row.

This Journal has for many years been the standard organ of dental literature in America, and properly ranks with the very best dental periodicals of the day; in consequence of which it has a European reputation. The April number (the last received) contains very many valuable contributions to dental science. Amongst many, we enumerate the following:—Dr. Piggot, on Aluminum; a Lecture, by Dr. Johnston, on the Circulation of the Blood; and on the Resection of both Upper Jaw Bones, by Dr. Heyfelder; Models and Casts, by H. R. Smith; on Excavators, by J. Taft; on the Autrum Pylori in Man, by Prof. A. Retyius; Plastic Gold, &c. &c.

The Dental News Letter. 335, Broadway, New York.

In no country in the world has there been so many dental journals published as in America; no less than four periodicals devoted to dental science have received the support of the profession in that country for some years. The Dental News Letter has been much enlarged since its first appearance; and may be ranked as one of the best class journals of the day. The July number contains many excellent original contributions; and amongst papers in the present number, are—Irregularity of the Teeth, by Dr. White; Improvement in Artificial Dentures, by Louis Jack; Practical Remarks, by A. W. Todd; Gold Foil, by F. Coar, &c.; and several editorial articles, &c.

L'Art Dentaire.—The movement amongst the dentists of this country, and their earnest endeavours to raise the position of the dental surgeon, and to give him a recognised standing, form one of the events of the present year. We are glad to see that on the Continent the profession is also up and stirring. Their first act has been the publication of the above-named monthly Journal: it is most ably conducted, and the original papers in it are well written and of great interest. Where all are excellent, it may appear almost invidious to call special attention to any: but we cannot refrain from alluding to an article in the June number, on amylene, in which is given the report of M. Robert, read before the Academy of Medicine: the discussions that followed are worthy the perusal of dental and medical practitioners. The Journal is characterized by a total absence of professional personalities, and embraces all matters connected with dental science. We wish it every possible success.

NOTICES TO CORRESPONDENTS.

Letters will not be inserted in this Journal unless authenticated by the name and address of the writer, not necessarily for publication, but as a guarantee of good faith.

It is requested that contributors will write legibly, and on one side of the paper only.

The Anonymous Correspondent who signed himself as "Ajax," is a person of the name of *Spence Bate*, formerly of Swansea, now residing at Plymouth.

American Journal of Dental Science and *the Dental News Letter*, &c.—These publications arrived after we had gone to press with the present number. They contain highly flattering and eulogistic commendations of our Journal, at which we are pleased. At the same time, it is right to state, that Mr. Robinson is not, and never has been, the Editor of this Journal. To say he has not contributed to its pages, and in every possible way endeavoured to advance its interests, would be an act of injustice to one who has the advancement of the profession so much at heart.

A Medical Student.—Apply personally to Mr. Bell.

W. R. M.—The gentleman referred to in our correspondent's letter, and also referred to in the *Dental News Letter*, has nothing whatever to do with the editorship of this Journal; he has been a contributor to its pages from the first number.

A Provincial Practitioner.—Apply to Mr. Harding; he will give you every information, we have no doubt, upon the subject.

Mr. W. Price, Surgeon.—Your patient should take legal proceedings against the cheap dental extortioner, and compel the swindler to refund the money.

Mr. S. Dixon.—We have applied to the publisher, and find that a wrong address was given.

Improved Artificial Dentistry.—A number of letters relative to Dr. C. S Putman's invention have been received, requesting our opinion upon the improvement. We, like others, have seen the specimens out of the mouth, which are excellent, both in appearance and finish. Dr. Putman also assured us that he had inserted many pieces of this kind of work, which had been worn for two or three years, and not the slightest chemical change or alteration in form had, upon examination, become perceptible; beyond this, we know nothing.

Communications and Letters have been received from :—Dr. Dixon, High Street, Stafford; Mr. Barrow, Stockport; Mr. D. Mackensie, London; Dr. Blaudy, America; Mr. Robinson, London; Mr. Purland;

Mr. Bennett; Mr. Perkins; Mr. Keene, Boulogne; Mr. Jacobs, Bridgewater; Mr. Fox, Brighton; Mr. T. Underwood, London; Mr. Vernon, Edinburgh; Mr. Lord; Mr. Thomson, Denmark Hill; Mr. Cambell, Dundee.

Books received :—On a New Method of Fixing Artificial Teeth—Dental News Letter, for October.

Mr. Pollock's Case of Cleft Palate.—The article and the wood engraving, illustrating this case, closed by operation, was kindly lent to us by the Editor of the *Medical Association Journal*, but through an error, this acknowledgment was omitted from our last number.

OBITUARY.

We regret to announce the recent death of Mr. Simpson, a highly-respectable dental practitioner, residing at Maidstone, Kent.

Dr. C. C. Allen, for several years Editor of the *Dental Recorder*, and an eminent member of the profession in the city of New York, was a native of Medway, Massachusetts, and commenced the labours of his calling in Norwich, Conn. Three other brothers of the family were inducted by him into dental practice, in which they are still actively engaged. Their grateful acknowledgment of his fraternal kindness, is one among many monuments to his memory, alike honourable to this band of brothers, the eldest of whom has first made an exchange of worlds.

Dr. C. C. Allen died of consumption, at his residence in Great Jones Street, New York, on Sunday, the 24th of May last, leaving a wife and an infant daughter to lament their loss.

Last summer Dr. Allen made a voyage to Liverpool, with the intention of remaining some time in England, for the benefit of his declining health; but the voyage seemed to be injurious rather than beneficial to his health, and he returned almost immediately to his family, with whom he proceeded without delay to Florida. Subsequently, he tarried a few weeks in Savannah, but finding that his strength was rapidly declining, he returned to New York early in April last, and soon sunk to his final repose.

Dr. Allen was too well known to the Dental profession generally, and to the Medical Society of New York, of which he was a member, to need any editorial commendation in this periodical. For a short time he officiated as Lecturer on Dental Science in one of the Medical Colleges of this city, and he was presiding officer of the New York Society of Dental Surgeons for one or more years.

It is gratifying to know that his success in business enabled him to leave his family in circumstances of comfortable independence.—*The American Forcep.*

THE

QUARTERLY JOURNAL

OF

DENTAL SCIENCE.

THE

QUARTERLY JOURNAL OF DENTAL SCIENCE.

As our Journal will not again appear until after the General Meeting of the Members of the College, and on which occasion new officers for the ensuing year must be appointed, we present to the Profession and the Public the Constitutional Laws, as passed at the public meetings of the Profession, together with the By-Laws, emanating from the Council elected on that occasion. We especially direct attention to Law Number X. in the Constitutional Laws of the Institution, and also to the Declaration following By-Law, Number XVI.

THE COLLEGE OF DENTISTS OF ENGLAND

THE LAWS AND CONSTITUTION AND BY-LAWS OF THIS INSTITUTION.

The College of Dentists of England has been organized by a Committee of Dental Practitioners elected for reporting on the best means of its establishment, at a Public Meeting of the Profession, held in London, September 22, 1856. The Report of the Committee was presented, received, and adopted, at a second Public Meeting of the Profession, held in London, November 11, 1856; when the Committee were re-elected, and entrusted with full powers to frame Laws and otherwise organize the College.

LAWS AND CONSTITUTION.

I.

The title of this Association shall be the "COLLEGE OF DENTISTS OF ENGLAND."

II.

The objects for which the College is established, are to unite members of the Dental Profession into a recognized and independent body, and provide means of professional education and examination.

III.

The College shall consist of Fellows, Members, Honorary Members, and Associates, to be elected according to Rule VI.

IV.

The affairs of the College shall be conducted by a Council of Management, to consist of a President, Vice-Presidents, a Treasurer, a Secretary or Secretaries, and a Council of fifteen others—to be elected annually by and from among Members of the College : two-thirds of which shall consist of Members of the last year's Council. Five Members to form a quorum. The mode of election shall be as follows. The Chairman and two Scrutineers having been appointed, the poll shall commence by each Member personally delivering his balloting paper to the Chairman, who shall deposit the same in the balloting glass. The poll to remain open from seven to nine o'clock ; when the Chairman and Scrutineers, attended by the Secretary, shall retire, cast the poll, and sign the return. In the event of an equality of votes, the Chairman shall have the casting vote.

V.

The Subscriptions to the College shall be as follows : the payment of £21 in one sum to be considered as a composition for life for Fellows or Members ; otherwise an annual subscription of £2 : 2s. to be paid by each Fellow or Member. The annual subscription of Associates to be £1 : 1s. Members shall pay a fee of £1 : 1s. on entering the College, and Associates a fee of 10s. 6d.

VI.

Every person desirous of being admitted a Member or an Associate, must be proposed by two Members of the College, and the Candidate must be personally known to one of them. His name shall then be placed upon the list of Candidates for admission, and there remain for at least five weeks previous to the evening on which the ballot takes place, which shall only be when there are not fewer than twenty-five Members present ; and to secure election, two-thirds of the votes of the Members must be in his favour. Fellows and Honorary Members shall be recommended only by the Council.

VII.

The Treasurer shall demand and receive for the use of the College all monies due or payable to the College, and shall keep full and particular accounts of all sums so received. An account in the name of the College shall be opened, and all monies deposited at a Banker's, to be appointed by the Council.

VIII.

No person combining any kind of business with the practice of the Dental Profession, shall be a Member of this College.

IX.

The Council shall have the power to remove from the list of Members and others, those who may do anything to the discredit of the College, or the annoyance of its Members; but such persons shall have the right of appeal at a General Meeting.

X.

No person allowing his name to be associated with disreputable advertisements of any kind, shall be a Member of this College. And any Member making a public exhibition of the Diploma, or of any other document granted him by authority of this College, shall have his name removed from the list of Members.

XI.

The whole effects and property of the College shall be vested in the Council of Management for the time being.

XII.

An Annual General Meeting shall be held in January (at such time and place as the Council shall appoint), to receive the Report of the Council; to elect Officers for the ensuing twelve months; and to transact the general business of the College.

XIII.

At every Meeting of the College or of the Council, the Resolutions of the majority shall be binding, though all persons entitled to vote be not present; and at such meetings the Chairman shall have a casting vote, independently of his vote as a Member of the College or of the Council, as the case may be.

XIV.

The Council may at any time call a Special General Meeting; and they shall at all times be bound to do so on the written requisition of ten Members, specifying the nature of the business to be transacted. Notice of the time and place of such Meeting shall be sent to the Members at least fourteen days previously, mentioning the subject to be brought forward; and no other subject shall be discussed at such Meeting.

XV.

The Ordinary Meetings of Members of the College shall be held on the first Tuesday in each month, excepting in the months of July, August, and September. The conduct of these meetings to be under the entire control of the Council.

XVI.

The Council shall have the power to make By-Laws, fill up vacancies in their own number, and transact the general business of the College.

XVII.

No change shall be made in these Rules, except at a General Meeting of Members of the College, specially convened for that purpose.

BY-LAWS.

Council.

1.—At every sitting of the Council, the time for their next Meeting shall be determined. In case of emergency, the President or Secretary shall have the power to call a Special Meeting; and upon the requisition of five Members of the Council they shall be bound to do so.

2.—The order of proceedings at Meetings of the Council shall be as follows:—

I.—The President, or, in his absence, one of the Vice-presidents, shall take the Chair. In the event of the absence of the President and Vice-presidents, the Council shall appoint a Chairman for the evening from their body.

II.—The Secretary shall read the minutes of the last meeting, which, upon being confirmed as correct, shall be signed by the Chairman.

III.—Business arising out of the minutes shall be disposed of.

IV.—Treasurer's business shall be brought forward.

V.—New Members shall be proposed.

VI.—Reports from officers shall be heard, and the business arising out of the same transacted.

VII.—It shall be open to any member of the Council to commence discussion upon propositions having reference to the business of the College; but notice of motion may be demanded by the President.

3.—All motions or proposals shall be written; and upon being put from the Chair, shall be decided in the manner set forth in the Laws and Constitution; except in case of a ballot, which may be demanded by any Member.

4.—Any Member of the Council who may be guilty of any act derogatory to the College, sha lbe liable to removal from the Council, by resolution thereof, at a Meeting specially called for the consideration of such misconduct.

5.—It shall be the duty of the Council to appoint Members, Associates, and other suitable persons, to read Papers, Essays upon subjects connected with Dental Science or Practice, before Ordinary Meetings of Members of the College.

Treasurer.

6.—It shall be the duty of the Treasurer to report to every Meeting of the Council (except at Special Meetings) upon the state of the finances. All accounts against the College shall be sent in to him, and brought before the Council by him, when necessary payments shall be ordered. All payments to be made by cheque—to be signed by the Chairman, by the Treasurer, and countersigned by one of the Honorary Secretaries.

Secretaries.

7.—It shall be the duties of the Secretaries, or one of them, or a delegate, to superintend the affairs of the College, under the direction of the President and Council. They shall keep all books of the College (other than those of the Treasurer and Librarian) in true, correct, and orderly manner; shall conduct correspondence; issue summonses; take minutes of Meetings for business, and read them.

They shall also (with the consent of the President, or one of the Vice-presidents) transact all business requiring attention between the various meetings of the Council.

Librarian and Curator.

8.—It shall be the duty of the Librarian and Curator to receive and take charge of all donations of books, manuscripts, maps, specimens illustrative of Dental Phenomena, and generally of such objects of interest as may be presented to the College. He shall enter a notice of all such donations, together with the donors' names, in a book to be kept for that purpose; and shall, when called upon, report to the Council the progress and condition of the Library and Museum.

Corresponding Members.

9.—That such members of the profession, residing out of the United Kingdom, as may be considered eligible by the Council, shall be nominated Corresponding Members of the College.

Candidates for Membership.

10.—Candidates for Membership, on being proposed according to the 6th Law, must send, or cause to be sent, to the Secretary, the following form, properly filled up:—We,
and being Members of the College of Dentists of England, recommend
of as a fit and proper person to be admitted a Member of the College.

Dated Signed, {———— ————

Subscriptions.

11.—The Annual Subscriptions to the College shall be due on the 1st day of January in each year, and shall be payable in advance.

12.—That no gentleman shall be eligible for the ballot until he has paid his Subscription for the current year, together with his Entrance-Fee. In the event of his not being elected at such ballot, the said Subscription and Entrance-Fee shall be returned by the Treasurer.

Ordinary Meetings.

13.—The business at Ordinary Meetings of Members of the College shall consist in the election of new Members; the exhibition

of specimens illustrative of facts and theories in connexion with Dental Science; the reading of papers, (previously approved by the Council,) and general discussion bearing upon such papers. It shall not be lawful to discuss or transact any other business at such Meetings, except with the consent of the Council, notice of which extraordinary business shall be posted in the rooms of the College at a previous Meeting.

14.—Members and Associates willing to read papers at the ordinary Meetings shall have every facility afforded them for so doing. Upon communicating to the Secretary their wishes, specifying clearly the nature of the papers, he shall lay such communications before the Council for their approval.

15.—At Ordinary Meetings of Members of the College, each Member shall have the privilege of personally introducing one visitor.

New Members.

16.—Every Candidate upon his admission as a Member or an Associate of this College, shall affix his signature to the Laws, By-Laws, and also to the annexed Declaration:—

Declaration.

In consideration of my being admitted a Member of the College of Dentists of England; I hereby undertake and agree never to insert any advertisement or advertisements (excepting such as may be approved of by the Council of the College) in any paper; nor to circulate hand-bills; exhibit show cases, boards or placards; or to follow any other profession, business or calling, whilst practising as a Dentist; or to do anything that may be in opposition to the Laws and By-Laws of the said College; and in the event of my departing from this agreement, I authorise the Council of the said College to advertise my name in the public papers, as being no longer a Member of the College of Dentists of England; immediately upon which, I agree that my subscription or subscriptions shall become forfeited to the College; reserving to myself the right of appeal, according to the 9th Law—the same appeal to take place within one calendar month from the date of remonstrance of Council.

17.—The names of New Members shall be once advertised in the *Times* newspaper by the Council, at the expense of the College, within fourteen days after their election. Such New Members shall also be permitted to advertise that they have been elected Members,

in the local newspapers of their respective places of abode, three times at their own expense. The following to be the form of advertisement.

"College of Dentists of England.

Mr. of was duly elected a Member of the College of Dentists of England, on the

Signed *Secretary*"

18.—Every Candidate for Membership shall produce certificates satisfactory to the Council or body of Examiners:—

1.—That he is Twenty-one years of age.

2.—That he has attended two courses of Lectures during two separate Sessions on General Anatomy and Physiology, and Special Anatomy and Physiology of the Head, Neck, and Thorax, and Dissected during two separate Sessions.

3.—That he has attended two courses of Lectures during two separate Sessions on General Surgery and Special Surgery of the Head, Neck, and Thorax, with Clinical attendance.

4.—That he has attended one course of Lectures on Therapeutics (including Materia Medica.)

5.—That he has attended two courses of Lectures during two separate Sessions on Pathology, general and special.

6.—That he has attended two courses of Lectures during two separate Sessions on the Theory and Practice of Dental Surgery.

7.—That he has attended one course of Lectures on Chemistry and Metallurgy, specially applied to Dentistry.

8.—That he has attended two courses of Lectures during two separate Sessions, on the Microscopical, Histological, and comparative Anatomy of the Teeth.

9.—That he has attended during two separate Sessions, the Practical Department of the College at some Hospital or Dispensary connected with the College, or otherwise under some competent Professor approved of by the Council of this College.

10.—That he has been at least four years studying the Mechanical Department of Dentistry with some competent Dentist, and produce a certificate, signed by the said Dentist, or his indentures.

11.—The Candidate must also, prior to examination, prepare and submit to the body of Examiners, a written Thesis on some subject connected with Dental Science or Art, operate on the Natural Organs, and also produce to the satisfaction of the Examiners, demonstrations of his ability in Dental Mechanism.*

* This By-Law will come into operation in October, 1858.

EXAMINERS AND EXAMINATIONS.

Election of Examiners.

19.—Every election into the Body of Examiners shall take place at a Special Meeting of the Council to be held for that purpose; of which meeting and its purpose, not less than seven days' notice shall be given to the Members of the Council by summons.

The mode of election of a Member of the Body of Examiners shall be as follows :—

Every Member of the Council present, and intending to vote, shall put into the balloting-box, a slip of paper containing the name of such party, whether a Member of the Council, College, or not, as he may think fit and proper to be elected an Examiner of the College. The papers shall then severally be examined by the President or the presiding Member, and the names written thereon, read aloud by the Secretary or person acting for him; and the party whose name shall appear on the greatest number of such papers shall be declared and shall be deemed to be duly elected a Member of the Body of Examiners for the period of three years. And in case, on the examination of the said papers, it shall appear that no party has a majority of votes in his favour, the proceedings of the meeting shall be continued, and the votes be again taken in like manner, until it shall appear that some party has a majority of votes in his favour.

Absence of Examiners.

Should a Member of the Body of Examiners be absent from more than three successive Meetings, without assigning a reason satisfactory to the Body, such absence shall be reported to the Council holden next after the said three Meetings, and the Member so absenting himself, shall be liable to removal from the Body by resolution of the Council.

Resignation of Members.

The resignation of a Member of the Body of Examiners shall not be effectual until the acceptance thereof by the Council.

Meetings of the Body of Examiners.

The Body of Examiners shall be authorised to hold such Meetings, and to make such adjournments as may by them be deemed expedient.

Every Member present from the commencement until the termination of any meeting of the Body of Examiners for the purpose of examination, shall be entitled to——

The President—or in his absence, one of the Vice-Presidents, or the presiding Member of the Council—may direct a Special Meeting of the Body of Examiners to be held on any emergency.

Admission of Members.

The Diploma of Members shall be in such form as the Council may from time to time judge proper.

The Diploma of every Member of the College shall be signed by the Members of the Body of Examiners present at the time of his examination.

If the Body of Examiners shall find any circumstances in the character, conduct, or mode of Practice of any Candidate for examination, which in their opinion renders such Candidate unfit to be admitted a Member of the College, the said Body shall have the power of declining to examine him until the opinion of the Council shall have been taken thereon.

Articled Pupils.

The Pupils of all Members of this College shall have their Indentures enrolled in the College Books.

Upon the death of a Member to whom a Pupil has been articled at the College, and the term of whose pupilage has not expired, the Pupil, by and with the consent of the Council, may be transferred to another Member of the College for the remainder of the said term.

Associates.

20.—Associates shall have all the privileges of Members, except the right of voting at General Meetings.

Alteration of By-Laws.

21.—No change shall be made in these By-Laws, except at a Meeting of the Council, specially convened for that purpose.

MONTHLY MEETING, JULY 30.

At the Special Meeting of the Members of the College, held on Thursday, July 30th, 1857, we referred to two papers read by Dr. R. Reid, one of the Vice-Presidents, before the Society. The following are the papers in question. The first paper was upon—

THE ALVEOLAR HEMORRHAGE COMPRESS.

Medical statistics record many cases of alveolar hemorrhage resulting from the extraction of teeth, some of which have terminated fatally, notwithstanding every means having been resorted to that science could dictate, or ingenuity suggest. A large number of cases, more or less difficult of control, are constantly occurring, that never find their way into medical periodicals; and most practitioners of ordinary standing will admit, that in the course of their practice they have had alarming instances of this troublesome disease.

Hemorrhage, as the most formidable result of extraction, has engaged my attention for some time, with the view to devise a mode of meeting it successfully; and the result of my labours I now seek to lay before the medical profession and the public.

The nature and cause of this disease seem as yet to be enveloped in much obscurity, and no positive result has been arrived at as to whether the treatment ought to be constitutional or local. The agents usually employed are styptics, cold applications, cautery, and pressure. To discuss the relative merits of these would be to travel beyond the limits of this paper, the last-mentioned remedy—pressure—being its only object.

Pressure, when well regulated, uniform, and accurate, will be found at once the safest and most effectual remedy that can be employed. In every case that does not speedily yield to the application of styptics, it ought to be had recourse to before the discharge is becoming confirmed, and the soft parts surrounding the cavity deficient in vital energy. If it were necessary, a greater degree of pressure could then be employed without occasioning sloughing, or ulceration. The directions laid down by Professor Miller, in his able article on the treatment of Hemorrhagic Diathesis (Monthly Journal for July 1842), are at once so comprehensive and so simple, as to admit of being understood and acted upon by any one. The requisites to the accom-

plishing his mode are at hand in every house, and can be had without either difficulty or delay. In every ordinary case this mode will answer the desired end, as effectually as any apparatus that may be constructed, the only drawback being the necessarily immoveable position of the lower jaw, which is to be "firmly shut, and retained so immoveably by turns of a bandage;" yet this could possibly be an objection in such cases only as might be deemed persistent.

The peculiar advantages of the Alveolar Hemorrhage Compress, which I have constructed, are as follows, namely:—

1. Its easy adaptation to the size and shape of the head and face, and to the situation of the hemorrhage.

2. Its attachment being on both sides of the face, no part of the instrument can be dislodged from the desired position.

3. Sustenance can be administered to the patient, without removal of the instrument, no obstacle being offered to the act of deglutition.

4. Continuous and graduated pressure may be obtained, and the head may be reclined on either side without pain or inconvenience, while the motion of the lower jaw is very little impeded.

5. Pressure can be applied on any number of bleeding points at once, on opposite sides of the jaw, if required.

6. In the apparatus for the under jaw, it has been so constructed as to press equally upon the inferior edge of the maxilla, from the symphysis to the angles, by which, and the use of a thick soft padding, all pressure upon the glands situated in the floor of the mouth are avoided. It also partakes of those advantages generally applicable to that of the upper jaw.

I have not sought to introduce this instrument to notice before satisfying myself of its practical utility. Its powers have been tested, and it has been found easy in application, and effectual in operation, without proving irksome to the patient.

With these few imperfect remarks I shall proceed to describe the application of the alveolar compress, as delineated on the accompanying models before you.

He then described the *modus operandi* of the compress upon the models and compress he had previously presented to the College Museum; observing—

In applying the compress, the socket is to be prepared in the usual way, by pressing a strip of lint into it, and putting a thick pad-

ding across it. When the cavity is not deep, I have been in the habit of inserting a piece of cotton, saturated with a solution of mastic, previous to applying the lint, the adhesive nature of the gum proving of service in retarding the flow of the blood.

The second paper was—

OBSERVATIONS ON THE DENTITION OF THE LILLIPUTIAN AZTECS.

This paper was also illustrated and explained by a number of models. Dr. Reid observed—The appearance in this country of those interesting little strangers called the "Aztec Lilliputians," has occasioned a good deal of speculation as to their origin, history, age, etc., in all which, there is a mystery yet to be cleared up. A question having arisen as to the last-mentioned point, professional opinion was sought thereon, in so far as could be formed by an examination of their physical structure, present appearance, and particularly their dentition. As this in both cases presented features of considerable interest, a few observations on it may prove worthy of being put on record.

Having taken casts of the dental apparatus in both individuals, I shall note the peculiarities in either case respectively, beginning with the boy, Maximo. In the upper jaw (see wood cut No. 1),

No. 1.

there are, altogether, eleven teeth; of these, three are deciduous,

namely, the left canine, and two molars right and left. The remaining eight are all permanent, and rank as follows, namely :—

2 Central Incisors
2 Lateral Incisors
2 First Bicuspids
2 Molars, being the six-year old teeth.

It will be observed, that the right canine is not included in this table. The space is unoccupied, and from the appearance of that portion of the jaw, there is nothing to indicate the approach of the tooth. It may also be stated, that the left one remains quite firm in its socket; and as the party exercising a guardianship over those diminutive beings, asserts that there has been no change in the dentition of the boy during the three years he has been under his care, it is not at all improbable that the missing tooth has been forcibly ejected from its place; the supposition being strengthened by the fact, that marks of violence are to be found on the face and other parts of the body. The statement of that party, however, must be received with caution, as it is more than probable, that during so extended a period as three years, important changes may have taken place, without exciting his notice. I shall immediately offer proof on this point. The lower jaw contains only seven teeth, all of which are permanent. They stand thus :—

2 Central Incisors
2 Lateral Incisors
1 Bicuspid (being the first, right side), and
2 Permanent Molars (six-year old teeth).

There is a vacant space for the first left bicuspid, caused by the disappearance of the remaining milk grinder, and which, it must be remarked, took place *unobserved by the above-mentioned party;* and that during the interval betwixt the 5th of November and the 3rd of December, these being the days on which I took the casts, which are represented in the accompanying wood cuts, Nos. 2 and 3,

No. 2.

No. 3.

the one showing the presence of the tooth in question, and the other the depression in the gum denoting its situation. This circumstance in itself is not deserving of consideration in estimating the age of the individual, as the milk grinder, at times, retains its place till an advanced period in life. In a case which recently fell under my notice, the patient, then in his forty-ninth year, applied for extraction of the same tooth, the second bicuspids on that side having not yet appeared.

The absence of the canine teeth of either denomination in the lower jaw will be observed, and constitutes one of the most remarkable features in the case. There is no space to receive them, neither is their presence in the jaw-bone indicated by protuberance either anteriorly or posteriorly. The incisors, were they placed in antagonism to the upper ones, might be found very serviceable, being strong and well grown, the laterals so much so, that, at first sight, they might be taken for canines. The opinion may therefore be hazarded, that nature has not destined the last mentioned teeth to make their appearance at all, an assumption favoured by the extraordinary relative position of the jaws to each other. To this point I shall shortly return. The permanent teeth are, on the whole, well developed, neatly shaped, in fair proportion to the general structure of the individual, and at the same time well placed, both as regards their growth above the gum, and the contour of the dental arch. There is, as yet, no appearance of the second molar in either jaw, but its situation is indicated by the flattened appearance of the gum, and the space betwixt the first molar and the ramus.

The form of the upper arch is somewhat remarkable, being rather narrow and pointed, yet, without that overlapping of the front teeth usually accompanying what is familiarly termed the rabbit shape. The relative position of the jaws to each other, that is, the bite, has already been alluded to, and deserves special notice. Irrespective of the Assyrian lineaments marking the upper portion of Maximo's face, the retreating lower jaw gives his profile a strange hawk-like expression. Instead of the under front teeth falling immediately behind the upper, there is a clear space of $\frac{4}{10}$ths of an inch between the two arches when shut, such as will admit of the thumb being freely passed up to touch the palate,

(see woodcut No. 4). This peculiar feature might, at first

No. 4.

sight, be regarded as a freak of nature, exhibited in a solitary individual; but the relative position of the upper and under back teeth militates against such a view, and rather favours the assumption that the peculiarity extends to the immediate family, if not to the tribe (supposing such to exist), and that for the following reasons, namely, that while the upper jaw contains eleven teeth, all arranged with due regularity, the under contains only seven; by which provision of nature the molars in either jaw antagonise and fit into each other with great exactness, the posterior edge of the last tooth in either jaw being in a line with that of its adversary. This feature, my observation has not enabled me to trace in cases of dental irregularity or mal-arrangement with children in this country, such, on the contrary, tending to affect the symmetry of the opposite arch, and destroy the regularity of a close-fitting bite.

It is highly interesting to trace the means by which nature has brought about the antagonism of the four six-year old teeth with each other. While the upper jaw has ample room for the full complement of teeth from the incisors to the first molars inclusive, and which will be twelve when completed, the retreating shape of the under jaw leaves room for eight only, the remaining four, namely, the canines and second bicuspids, being denied a place among their fellows, and thus, by their exclusion, the end is accomplished, the space betwixt both dental arches at their apex answering to that which would be required on each side to contain the teeth wanting.

We now come to the case of the girl, Bartola. In her dentition there is little to note, it being in a backward state. In the lower

jaw (woodcut No. 6), she has got her two six-year old teeth, and a

No. 5.

No. 6.

permanent central incisor on the left side. All the other nine are deciduous, and remain firm in their sockets, with the exception of the right central incisor, which is about to give way to its permanent successor. There is a peculiarity in the lateral incisors and canine teeth, on either side worthy of remark. These teeth are fused together, forming one instead of two separate teeth, all attempts to pass a thin blade down between them having failed. Such may occasionally be met with in single instances, but rarely in corresponding teeth in opposite sides of the dental arch. In the upper jaw (woodcut No. 5), the only permanent teeth that have, as yet, made their appearance, are the six-year old, the temporary set remaining quite unbroken. A word may, however, be said as to the shape of the dental arch.

On beholding these little creatures for the first time a few months ago, I was forcibly impressed with the idea that they were not of the same race. There was nothing in the physiognomy of the girl that corresponded with the prominent nose, lustrous protruding eye, retreating brow, and silky hair of the boy. Her facial angle was entirely different, her eyes small, and her hair curling and even crisp (were it not carefully looked after, and parted into ringlets), all which point to an African rather than an Asiatic origin. An examination of the upper dental arch strengthened the impression first made, its breadth and roundness, with a slight flattening in the centre, bearing no small resemblance to that of the negro, and which must, in the course of time, become more apparent when the jaw is fully developed. This point, although away from that immediately

before us, is still interesting and worthy of being touched on, as shewing the assistance to be obtained from an examination of the dental structure, in determining the race to which an individual probably belongs.

Having already mentioned that the object sought in examining the dentition of these children was, in the absence of any positive evidence on the point, to afford an opinion as to their probable age, I may shortly state the conclusion come to, and the means by which it was arrived at. The ages were judged to be about twelve years in the boy, and eight in the girl. In estimating them thus, the present state of dentition, in either case, would scarcely have warranted it, were that to be relied on as positive evidence on the point. Other appearances were sought for and found, tending to solve the difficulty. The development of the permanent teeth, as to their height above the gums, and, in the boy, the flattened appearance of the latter, at the heel of the jaw, betokening the advent of the twelve-year-old teeth, also the marks of attrition on such of the permanent teeth as had antagonists, were significant features, and although affording apparently but scanty evidence, yet, taken in conjunction with the general structural development betokening a slow physical growth in each individual, warranted the opinion hazarded as to their age. In the absence of direct and positive evidence on the point, it is satisfactory to me to learn that the above opinion is identical with that expressed by one whose authority in such matters is of the greatest weight. A friend informs me that he was present at a meeting of the Ethnological Society of London, held in July last, when an elaborate essay was delivered by Professor Owen, on the physical structure, age, etc., of the Aztec children, in which he assigned to them nearly, if not exactly, the ages which my examination led me to consider as nearest the truth. I have not been able to ascertain more precisely the exact opinion of Professor Owen, or the grounds on which he formed his conclusions. His paper has not yet been published, but will, I am led to understand, appear in the Transactions of the Society in the course of the approaching year.

COLLEGE OF DENTISTS.

MONTHLY MEETING, October 6.

The First Meeting of the Second Session took place this evening, the President in the Chair. The following Gentlemen were balloted for and duly elected Members of the College :—

E. Williams, Esq. - - -	Apsley, Bedfordshire
T. Morgan, Esq. - - -	Waterford
H. Jackson, Esq. - - -	Camden Town
H. G. Vanderpant, Esq. - -	Maddox Street
H. C. Vanderpant, Esq. - -	Maddox Street
R. Rogers, Esq. - - -	Camden Town
R. Heath, Esq. - - - -	Geelong, Australia
— Belisario, Esq. - - -	Sydney, New South Wales

Museum and Library Report, October 6, 1857.

The following is a list of articles which have been presented to the Museum and Library of this College since the last Report of July 1857.

Three models exemplifying Aztec Dentition.—Presented by Dr. Reid.

A model illustrating a curious case of Alveolar Absorption.—Presented by H. T. Perkins, Esq.

A Trifanged Upper Bicuspid.—A Supernumerary Tooth.—A specimen of Exostosis.—Presented by M. Alex, Esq.

Skull of a French hound.—Model of a case of Alveolar fracture —Model of a case of Cleft Palate—Model of a case with supernumerary central; and various models illustrative of different cases of irregularity.—Presented by — Bartlett, Esq.

Two specimens of Trifanged Bicuspids.—Presented by George Owen, Esq.

First lower Molar with three fangs.—Upper Wisdom Tooth with four fangs.—Presented by James Bate, Esq.

Two models of the mouth of Miss Julia Pastrana, the Nondescript.—Presented by Adam Thomson, Esq.

A Pamphlet on the performance of operations on the Teeth without pain.—Presented by S. Parker, Esq.

(Signed) CHARLES JAMES FOX,
Librarian and Curator.

Mr. W. G. Bennett (Associate) read a paper on Refining Gold, as follows:—

REMARKS ON GOLD REFINING AND ASSAYING.

Mr. President and Gentlemen,—In the manufacture of most objects in the precious metals, a large portion is apparently wasted; or, in other words, the finished article will weigh much less than the raw material employed; the difference being made up by cuttings, filings, and the like; part of which, as the cuttings, may be readily converted into a workable state; the remainder requires a somewhat complex process for its restoration; and a small quantity will be entirely lost.

If the metal we have to deal with were not more costly than iron, no great pains need be taken to preserve the wastes made in working it; but, when I tell you the relative value of gold to iron is as 6000 to 1, you may understand why so much care is taken to prevent ultimate loss.

The search for a needle in a bottle of hay, is proverbially considered as a thoroughly hopeless task; but in recovering the minutely, I might say microscopically, small particles of gold, such as are removed in the act of polishing, and which are mixed with a large quantity of foreign substances, the metallurgist accomplishes a task of a far more difficult character.

I am informed, that a few years ago, some Dentists in good practice, were contented to save their gold-cuttings, allowing the filings to fall on the floor, and be thrown in the dust-hole with the sweepings of the shop.

Generally speaking, however, in the workshops of the better class of Dentists of the present day, I believe more care is taken to economise; and not only are the filings saved, but the sweepings from the floor, the washings from the hands, the polishings, and, in fact, every thing likely to contain gold is collected, in order that the precious metals may be extracted from it.

In my present paper, I shall endeavour to explain, how the gold, in that kind of waste called limmel, may be restored to a workable

condition: to describe how the sweep, and other kinds of waste might be treated, would be making this paper too long. I might, perhaps, be allowed to say, the word limmel is derived, or corrupted, from the french word *limaille*, filings from *lime*, a file.

There are several modes of treatment; but they may be resolved into two classes—the wet and the dry; the former I shall not touch upon, and of the latter, the one I think best, and which I will describe, is that by means of saltpetre and pearlash.

The first step will be to anneal the limmel; by which means, all the organic substances, as bone and wood, will be carbonized, and if stirred while red hot, so that all parts may be exposed to the action of the air, most of the carbon will be converted into carbonic acid, which will escape in the form of a gas. An iron ladle, kept for the purpose, will be found as useful as any other form of annealing-pan, and can easily be obtained. When cool, the particles of iron are to be removed by means of a magnet. The heterogeneous mass should then be mixed with saltpetre and pearlash, in quantity varying with the amount of impurity; but a good general proportion will be, one part saltpetre, one of pearlash, and two of limmel. This mixture is to be placed in an earthern pot made for the purpose, and called, on account of its form, a skittle-pot. An ordinary crucible would answer the purpose, but a skittle-pot is to be preferred. The pot should be luted to about half its height, with stourbridge, or some such clay, mixed with a little short hay, stable-manure, or tow, and be well dried before being submitted to the action of the fire. All being in readiness, two pot-stands should be placed in the furnace, the lower one inverted and resting on the bars, the upper one standing upon the lower; the pot is then placed in the upper stand, which acts as a saucer, and would be likely to save the gold, in case the lower part of the pot breaks. The chief object of the lower stand being to raise the pot so far above the bars, that the body of it may be exposed to the hottest part of the fire. The fire is next to be lighted, and the temperature gradually raised to about the melting-point of gold. It is better, at this stage of the proceedings, that not more than three-fourths of the pot be covered by fuel.

At a red heat, saltpetre, or nitrate of potassa is decomposed, a large quantity of oxygen being liberated, part of which escapes in the form of gas, another portion combines with the oxidizable metals and other substances; these again unite with the pearlash (an impure carbonate of potassa), and form a compound, which is so limped

at a high temperature, as to permit the minute particles of melted gold to pass through it by their own gravity, and collect in one mass at the bottom.

If any quantity, say half an ounce of gold, in pieces not larger than a pin's head, be mixed with about ten times their bulk of powdered charcoal, placed in a covered crucible, and kept for about a quarter of an hour, at a higher degree of heat than necessary to melt the gold, when the pot is removed from the fire and cooled, the gold will be found melted in the form of separate grains, showing that heat alone would not be sufficient to collect the gold from the impurities with which it is combined.

When the boiling, as it is termed, or disengagement of gas, ceases, but not until then, a lid should be placed on the pot, more fuel added, until the whole is covered. The heat may then be raised, as high as an ordinary wind-furnace will permit, and kept at this temperature from thirty minutes to one hour and a half, according to the quality and quantity of the limmel employed. The furnace should then be allowed to cool, the pot removed, and when quite cold, it can be broken. If the operation has been successfully performed, a button of gold will be found at the bottom. This should be remelted with borax, in a blacklead pot, poured into an ingot mould, and will generally be found in a malleable state.

The bar of metal, or ingot, being obtained, the next step will be to ascertain its quality; and the general plan is to have an assay made of it. For this purpose, about one dwt. is cut from the ingot, enclosed in about half a sheet of note paper, with the words—Parting Assay, together with the name of the person sending it, written on the top; this is then to be forwarded to an assayer, who, when the trial is completed, will fill up the paper, and return it, on payment of the usual fee. In London, if sent before ten in the morning, the papers are generally ready about four the same afternoon, and the fee is eighteen pence.

As the process of assaying is a very interesting one, I will give a brief account of it, as performed in this country, time not permitting me to go into detail.

A portion of the sample sent, either eight or twelve grains, is accurately weighed; two or three times its weight of pure silver is added; the whole is wrapped in pure lead foil, and placed on a small crucible, made of bone ashes, called a cupel; the cupel is placed in a muffle, with openings at the sides, so as to allow the air to pass

freely through it. At a red heat the metals melt; the lead is converted into litharge (an oxide of lead), which dissolves what are termed the base metals, and is with them absorbed into the substance of the cupel. When cold, the button is weighed; the loss indicates the quantity of base metal. The button of silver and gold is then rolled to about $\frac{1}{10}$ of an inch in thickness, boiled in a flask with dilute nitric acid, annealed, and again weighed; the loss this time indicates the quantity of silver; the weight of the fine gold remaining, is the quantity contained in the sample.

It may be well, if I now say a few words about the information contained on the face of an assay paper, and how to apply it.

The figures denote the quantities of fine gold, and fine silver, that would be contained in twelve ounces, or a pound troy: the quantity of base metal is found, by adding together the weights of gold and silver, and subtracting this sum from twelve ounces. When the alloy is in a workable condition, the base metal is always assumed to be copper.

Diagram No. 1.—Copies of two assay papers, the letters F. G. and F. S. signifying Fine Gold, and Fine Silver; the figures in antique characters represent the quantities of copper—

	oz.	dwt.	grs.
F. G...	7	15	0
F. S...	2	2	12
	2	**2**	**12**

in pound troy.

	oz.	dwt.	grs.
F. G...	9	5	0
F. S...	2	5	0
	-	**10**	**0**

in pound troy.

The quality of gold, as I dare say you are all aware, is always reckoned by carats, pure gold being taken as the standard; and it is said to be twenty-four carats fine. In any alloy, every twenty-fourth part of pure gold is reckoned as one carat, no matter what may be the nature of the metal it is alloyed with; so a compound of six parts pure gold, with eighteen of other metal, would be six carats fine; eighteen parts gold, to six of alloy, would be eighteen carats.

To ascertain from an assay paper, the quality of gold, in carats:—Double the ounces of gold for the whole number, adding the 10 dwt., which count as one, place the units of dwt. to the right of the decimal point, convert the grains into decimals of dwt., and place the product to the right of the figure denoting dwt.

Diagram No. 2.—

oz.	dwt.	grs.	oz.	dwt.	grs.	oz.	dwt.	grs.
7	15	12	9	5	0	9	0	18
15.55			18.5			18.075		

The next question will be, how much of each, gold, silver, and copper, is contained in the ingot assayed? The following rules will solve the problem.

As 12 oz. are to the quantity of fine gold in the assay, so will be the weight of the ingot, to the answer in fine gold, as required. The same rule will apply to the silver and copper, substituting the weights of those metals for the weight of fine gold.

Diagram No. 3.—F. G. in A., F. S. in A., and C. in A., represent Fine Gold, Fine Silver, and Copper, in Assay; Wt. of I. represents Weight of Ingot—

As 12 oz. : F. G. in A. :: Wt. of I. : Ans. F. G.
12 oz. : F. S. in A. :: Wt. of I. : — F. S.
12 oz. : C. in A. :: Wt. of I. : — C.

Or, divide the weight of each metal in assay by twelve, and multiply the product by the weight of the ingot.

Diagram No. 4.—M. in A. represent weight of gold, silver, or copper, in the assay; Wt. of I. stands for Weight of Ingot—

$$\frac{\text{M. in A.}}{12} \times \text{Wt. of I.} = \text{Ans.}$$

I must now bring my paper to a close. I have shown how the precious metals may be recovered from one kind of waste; how to ascertain the quality of the product, as compared with a known standard; and lastly, how to determine the quantities of gold, silver, and copper, in alloys, containing alloys of these three metals.

Anything I have not made clear, I shall be most happy to explain, to any one who may feel sufficiently interested in the subject to make enquiries.

DISCUSSION.

The President asked Mr. Bennett what fluxes he was in the habit of using?

Mr. Bennett.—Pearlash and saltpetre.

Mr. Mackenzie.—We have listened to an excellent paper from Mr. Bennett, upon refining gold by the dry process, which has both antiquity and use to recommend it. The gold and silver are certainly both obtained in a pure state, but the process is elaborate and expensive. Years ago, I made use of it myself, until I became acquainted with a watchmaker and gilder, who, witnessing my process, said,

"I require as fine gold as can be obtained, but to get it I do not take so much trouble; I merely melt up all the old material which I buy in the shop—I throw the melted mass into water, from a trifling elevation, put the grains thus procured into a retort containing nitric acid, and boil over a sand bath. All the baser metals are taken up by the acid, whilst the gold at the bottom is left in a pure state, appearing as a dark-coloured powder—I then wash with borax or soda, and melt in a crucible."

Mr. Perkins.—Would such a process apply to limaille?

Mr. Mackenzie.—Equally to limaille, if it be coarse enough.

Mr. Wright.—What should be the quality of the material to allow the acid to act upon it, and how is platina extracted?

Mr. Mackenzie.—To allow the acid to act freely, the proportion of base metal must not be less than four parts to one part of gold. In the event of any quantity of platina being mixed with the gold filings, they may be dissolved in nitro-muriatic acid. The gold thrown down with sulphate of iron, the platina with an alkali. I have not, however, found a small quantity do any harm to gold used for dental purposes; on the contrary, it improved by the admixture.

Mr. Matthews.—Mr. President: I have with much pleasure listened to Mr. Bennett's paper on refining gold, and the reduction of limaille, but as I consider every dentist may not have the means of applying the dry process, allow me to state the mode I recommend, as being the less elaborate, and the less expensive. Limaille generally consists of gold, silver, iron, lead, tin, zinc, and bone filings. I take the whole, and place them in a large porcelain or wedgewood basin, and pour on them dilute nitric acid, applying a gentle heat. The silver, and the other metals not in combination with the gold, will be dissolved, and the bone dust gelatinized by that process. I filter the solution, and well wash the gold remaining, which will be in the same condition, or quality, as when first used, viz. twenty-two, eighteen, or sixteen carats fine. To the filtered solution I add chloride of sodium to throw down any silver; to which precipitate, when well washed, I add dilute sulphuric acid, and some small pieces of pure zinc. The nascent hydrogen decomposes the chloride of silver, and leaves it in a metallic state, which may be fused into a button with a little borax or carbonate of potash, or an admixture of both. If this process be carefully performed a grain of gold will not be lost.

The President.—Would it not be a better plan to carbonise the bone in the first instance?

Mr. Matthews.—I think it quite unnecessary to do so.

The President.—Perhaps Dr. Putnam, of New York, whom we have the pleasure of seeing amongst us this evening, will tell us the method adopted in America.

Dr. Putnam had no idea of addressing the members of the college when he entered the room, indeed, he had come to learn instead of to teach, at the same time, he would willingly state the process adopted on the other side of the Atlantic. The metal to be refined was placed in a crucible and heated to a red heat, when saltpetre was added, and an iron rod immediately stirred about on the top of the gold; the flux acted on by the saltpetre is supposed to work up base metal, but the precious metal is left by itself in a mass: in fifteen minutes it may be removed and rolled into plate.

The President.—Is it not assayed?

Dr. Putnam.—No, sir.

Mr. Mackenzie.—Saltpetre has, in my opinion, a decidedly injurious effect on melted gold.

Mr. Matthews wished to know how Mr. Bennett managed his "sweep."

Mr. Bennett.—To enter into such details would occupy a longer time than the meeting could spare.

Mr. Matthews was glad that an associate had come so readily forward to read a paper, and he trusted the good example would be followed by others.

Mr. Bennett then replied, that the principal part of the observations made, applied to the wet method, a subject he had purposely avoided. In reference to the remark of Dr. Putnam, he said it quite confirmed a statement made in the *Dental News Letter*, and copied into the *Quarterly Journal of Dental Science* for October, from which it would appear, that scientific as the Americans are known to be in most matters connected with dentistry, on the subject of refining and alloying gold, they do not appear to be in advance of dentists of this country. Their plan brought to mind the remark of an English dentist, who, when asked what was the alloy he used, said, "a sovereign to a shilling for uppers, and a sovereign to a sixpence for lowers; should the colour be too pale, I put in a half-penny when I melt a lot." Of course, if this is the principle upon which alloying is conducted, all the trouble of assaying would be useless, and the

necessity for understanding the use of an assay paper would be at an end. One great objection to the use of acids, was the great inconvenience arising from the fumes; when large quantities of materials were employed, arrangements, it is true, might be made, by which this could be got rid of: but excepting for very small quantities, the dry method was the one found best, and the one generally employed; the object being not to obtain fine gold and fine silver, but to get rid of impurities, and collect the gold, silver, and copper, in a malleable form, and then alloy it to the quality required. He thanked the members for the attention with which he had been listened to, and hoped some, at any rate, of those present, might be benefitted by the observations he had made.

A vote of thanks to Mr. Bennett, for his interesting paper, was unanimously carried.

Dr. Putnam entered into an explanation of the invention of hard rubber as a base for artificial teeth. The substance of his remarks, however, was nearly similar to an article on the subject, which was published in the *Forceps* American dental journal, and appeared in our last number.

The meeting adjourned to Tuesday, November 3rd.

MONTHLY MEETING, November 3.

The President in the Chair—

ELECTION OF MEMBERS.

The following gentlemen were balloted for, and duly elected Members of the College.

J. Bell, Esq. . . . . Perth
F. Dowle, Esq. . . . . Bradford

Museum and Library Report, November 3, 1857.

The following is a list of articles which have been presented to the Museum and Library of the College of Dentists, since the last report, October 6, 1857.

Tooth of an Elephant.—Presented by A. Thomson, Esq.

Model of a case of irregularity in the position of permanent canine and lateral.—Presented by A. Hockley, Esq.

Old Specimen of bone work.—Presented by A. Hockley, Esq.

Model of a remarkably deep palate and contracted dental arch.—Presented by Alfred Hill, Esq.

Specimen of Hippopotamus teeth, with shot lodged in its substance.—Presented by J. Humby, Esq.

Various Specimens of carious teeth.—Presented by A. Jones, Esq.

Specimen of Vulcanized Rubber Base for artificial teeth.—Presented by Dr. C. S. Putnam.

Specimen of the Cheoplastic Process.—Presented by Dr. C. S. Putnam.

LIBRARY.

First three numbers of the "Quarterly Journal of Dental Science."—Presented by the Proprietors.

A copy of "Berdmore on the teeth."—Presented by J. Humby, Esq.

"On the pleasures and advantages to be derived from the Study of Natural History," by T. W. Flower—with other pamphlets.—Presented by S. L. Rymer, Esq.

Arthur on "Adhesive Foil."—Presented by the Author, Dr. Arthur, America.

As announced at the close of last meeting, Mr. Robert Thomson, Camberwell, read the following paper on

THE EFFECT OF ADULTERATED FOOD UPON THE TEETH.

Mr. President and Gentlemen.—In appearing before you this evening, as the author of a paper on some of the exciting causes of caries of the teeth, it is necessary that I should offer some apology for having brought forward a subject that has so frequently occupied the attention of some of our most eminent practitioners, those who have passed from among us, and others who are now living and are ornaments to the profession. But as the matter still remains as undecided as ever, I shall merely add my own opinion towards the solution of a question that is involved in such mystery, as, the more it has been discussed, the more apparently perplexing it has hitherto appeared. I shall, therefore, only advance that which seems to me to be one of the most probable causes; and this shall be done with every feeling of respect and deference towards those who have preceded me, and from whose views I differ.

The decay of the teeth called "caries, or gangrene," is not confined to any period of life, nor to either of the sexes, but it exercises its devastating influence to a much greater extent with some persons than with others.

The exciting cause has not yet been agreed upon; whether it proceeds from hereditary predisposition, or from other influences. But from whatever cause it originates, teeth do decay, and often very early in life. If we survey the human body, and contemplate how wonderfully and beautifully it is made, how admirably all its parts are combined; if we examine the organs of which it is composed, we can see how intimately they are connected and intricately interwoven, each having its peculiar use, and so properly adapted for the purposes intended. In the normal state of the human body there is nothing superfluous, nor is there anything wanting that is required for the well-being of the creature. In this we see both the wisdom and the power of the Great Creator.

When the human body is so complete and perfect as a whole, why should one portion be deficient and more liable than the other parts to decay? The substance of which the teeth are composed being the hardest in structure of any of the other parts of the human system, there must be an exciting cause for their premature loss. The opinions of the different writers on this subject being so much at variance with each other, induced me to pay considerable attention to the operation of this disease; and in consequence I made numerous experiments, with the object of endeavouring to arrive at a satisfactory conclusion as to the cause in question. It is unnecessary to enumerate the great number of opinions that have been given and recorded; but I may mention the three prevailing theories now most acknowledged, viz.—"Lateral pressure," "Inflammation," and "Chemical action."

The decay of the teeth, which is said to consist of a gradual decomposition of the substance of which they are composed, has been variously described; but, as far as I can judge from observation, it begins externally, in the interstices between the teeth, in the hollow parts between the cusps of the crowns, in the indentations at the sides, and along the border of the gums; but seldom on the plain surface of the enamel, or on the roots. This I think indicates that decay originates from the influence of external agents that find a lodgment in these parts. From the most careful observation, and by making many experiments, I am inclined to think that neither lateral

pressure nor inflammation would cause the teeth to decay in the absence of chemical action, and this chemical action arises from the artificial state in which we live (Mr. Thomson here exhibited a tooth, by way of illustration). Savages, and those people who live in a state of nature, are said to possess better teeth than those of civilized nations, because their systems are not enervated by luxurious living. From this consideration, I wrote in January last to Lieutenant Gordon Cumming, and requested him to give me what information he could on this subject, he having sojourned so long among the wild tribes of South Africa; to which I received the following reply:—

232, Piccadilly, January 10, 1857.

SIR, In reply to your inquiry, regarding the dentition of the wild tribes of South Africa, they are much better than ours, in fact, a diseased tooth is hardly ever met with. Those people have no care; no taxes to pay; their stomachs are like the ostrich; they are ever out in the open air; they eat simple food, flesh, corn and milk. I have taken great interest in teeth and bones from boyhood, and remember once visiting a battle-field in the far interior of South Africa, about a month after it was fought, and carefully examining the skulls, and was astonished at the beauty and regularity of the teeth.

To Mr. R. THOMSON. Yours, truly, GORDON CUMMING.

This is a corroboration of the opinion I had previously formed that the decay of the teeth emanates entirely from chemical action, through the great variety of substances brought into contact with them by what we eat and drink. But I am further of opinion, that this prejudicial influence is heightened by the great extent to which adulterations have been carried; not simply in the luxuries we indulge in, nor the necessaries of life, but even in the medicines prepared to relieve sickness and prevent death. It is generally supposed or believed, that the premature decay of the teeth is more prevalent now, than is said to have been the case in former times. May not adulterations in some measure account for this? That such is very probable, I shall attempt to show. We are indebted to the proprietors of the "Lancet," for establishing an analytical commission, which sat for four years, from 1851 to 1854 inclusive. The result of their labours was published periodically in that journal. This led the Government to institute an enquiry, and a Committee of the House

of Commons was formed for that purpose, and all that had been previously published was confirmed. This is what induced me to think that some of these adulterations might have a prejudicial effect upon the teeth, and accordingly I made a series of experiments, some of which I shall presently enumerate. But I propose, first, to make a few extracts from the Lancet and other works, commencing with "Bread."

In the manufacture of bread, there are various kinds of flour used, the product of the different sorts of wheat cultivated at home and abroad, and of these varieties there are several modifications.

In an article in "Hooper's Medical Dictionary," it is stated, that the cheap bakers' flour is often made of the worst kinds of damaged Foreign wheat, and that in London no fewer than six distinct sorts of flour are sold in the market.

Besides the different qualities (says the Lancet), there are two distinct kinds of bread made. In the one yeast, leaven, or ferment, is used, and is called leavened or fermented bread. The other is prepared without leaven, and is called unfermented bread. But substances are used in the manufacture of this kind of bread, the operation of which is, to a certain extent, analagous to yeast. Leavened bread should consist only of flour, yeast and water, with a little salt; such is the composition of genuine home-made bread. The bread of the shops is prepared with inferior kinds of flour, mixed up with great quantities of alum and salt. The substances used in making unfermented bread are, hydrochloric acid, or muriatic acid, with a proportion of carbonate of soda. The following is one of the receipts for making unfermented bread:—

Flour - - - -	3 lbs.
Muriatic Acid - -	1½ fluid drachms
Carbonate of Soda -	9 drachms
Water, about - -	25 ounces

Observe the large quantity of muriatic acid to three pounds of flour! nearly an ounce and a half. It appears doubtful how far such a preparation can be used constantly with safety to health, or without its exercising a marked influence on the teeth. In the manufacture of bread, alum is used with a two-fold object; first, to render the flour of an inferior quality, white; second, to enable it to retain moisture, by which the loaf is made to weigh heavier. In addition to the great extent to which the bakers adulterate bread, the

millers pursue the same nefarious practice with the flour. I have seen several notices in the papers, of millers having been fined for adulterating their flour with alum and other substances still more criminal; therefore, between the two, how unwholesome must much of the bread be before it reaches the consumer. There are other substances sold under the names of baking, egg, and custard powders, which are combinations of carbonate of soda, mixed with flour and starch, and coloured with chromate of lead.

I shall now proceed to notice vinegar and its adulterations. Acetic acid is the volatile principle from which vinegar owes its pungency and aroma. This acid exists ready formed in notable quantities in certain plants, and may be readily generated by fermentation of various vegetable and animal substances. For commercial purposes, vinegar is made from vegetable and spirituous infusions, as the grape, malt, and the sugar-cane. In most cases when vinegar is manufactured upon a large scale, it is formed entirely at the expense of alcohol. There are four kinds of vinegar met with in commerce; wine vinegar, malt vinegar, sugar vinegar, and wood vinegar. The first three depend upon fermentation, and result from the change of alcohol into acetic acid, while the last is obtained from certain kinds of wood by distillation.

The principal adulteration of vinegar is dilution with water, and the addition of sulphuric acid, and the use of certain acrid substances as colouring agents. But vinegar will act prejudicially on the teeth, even if not adulterated, and I may therefore classify with it the following observations on an article of every day consumption, viz.—pickles and their adulterations. In the preparation of this stimulant to the palate, I shall not notice the practice of substituting one kind of vegetable for another, but only the adulteration of the vinegar, and the substances used for heightening the colour of the pickles. The following quotations are from popular works, treating on these and similar subjects. "Vegetable substances preserved by means of the antiseptic power of vinegar, whose sale frequently depends upon a fine lively green, are often intentionally coloured by means of copper."

Many vegetable substances are thus impregnated with this metal, and fatal consequences have arisen from partaking of them. One of these publications prescribes, that *greening* should be thus produced. "Take a piece of verdigris the size of a hasel nut, a bit of alum, and a little bay salt, all finely powdered; put into a bottle with half

a pint of vinegar; shake it and let it stand till it clears; put a tea spoonful into whatever you wish to colour." From a publication which has run through eighteen editions, we gather the following. "To render pickles green, boil with them halfpence, or let them stand for twenty-four hours in copper or brass pans." With such facts as these, we need not be surprised at hearing of fatal results, and Dr. Percival, in the Medical Transactions, vol. IV. page 80, records a case, resulting in death, arising from the inordinate use of these deleterious articles. Of seventeen samples of pickles, purchased at different shops in London, analyzed by the "Lancet Commission," copper was found in all; in some to a highly dangerous, and in others, to a *poisonous* extent; and in addition to copper, they contained sulphuric acid in large proportions.

To enumerate all the different adulterations that are likely to produce decomposition of the tooth structure, a substance so readily acted upon by acid, would far exceed the limits of my paper. I shall therefore notice only one other, that is, poisonous coloured confectionaries. This is a subject that I conceive to be of very great importance, because at the time they are consumed in the greatest quantities by children is, when the second, or permanent set of teeth are in progress of formation, and this a period when the foundation for a perfect or imperfect set of teeth is laid. I am not aware of this having been considered by any of the writers upon the teeth.

In Acum's treatise on adulterations, we find it stated, that with various kinds of confectionary, especially those exposed for sale in the streets, for the allurement of children, the grossest abuses are committed. The white comfits, called sugar-plums, are chiefly composed of a mixture of starch and Cornish clay; this is a species of very white pipe clay. The red drops are usually coloured with inferior vermilion, or red lead. Mr. Mitchell says, that "all cheap lozenges I have examined, contain starch, and nearly all chalk and plaster of Paris." He further says, "I have now to treat of a far more dangerous adulteration; I allude to the colouring matter used in the manufacture of confectionaries, as red oxide of lead, and other poisonous substances; and it should be remembered too, that the preparation of lead, mercury, copper, and arsenic, are what are termed cumulative, that is, they accumulate in the system little by little, till the effects of the poisonous matter become manifested, and which have often resulted in death." I may remark, that it is quite unnecessary to use these mineral poisons, as colouring confectionary can be accomplished as

perfectly by the acid of vegetable substances, in themselves, harmless.

I shall now enumerate some of the experiments I have made, and remark upon them as I proceed. All acids act upon the teeth, but mineral acids act more readily than those obtained from vegetables. The first experiment I made, was to place a sound tooth in a glass containing nitric acid; the enamel was destroyed in half-an-hour, and in twenty-four hours there remained only a very small portion of the matter it contained, floating. I tried the same experiment with muriatic acid, and it carried on the work of destruction even quicker than the nitric acid. I next tried sulphuric acid; this, and the nitric acid, appeared to act at the same rate. I afterwards took a portion of each of these acids, and diluted them to the proportion of six parts water, to one of acid, and in twelve hours the enamel of each was gone, and in twenty-four hours the animal substance alone remained, and this, when taken out of the acid, was very soft and flexible. In this case too, I found that the dilute nitric acid was a little slower in its action than the others. After these experiments, I pressed the juice from a lemon into a glass, and put a tooth into it; in four days the enamel was destroyed. I then tried the experiment with the juice of a Seville orange, and the result was nearly the same as with the lemon. I afterwards put a sound tooth into some vinegar that had been used for mixed pickles, and this produced quite a contrary effect from any of the others; it shrunk up the root, which became very black, but scarcely affected the enamel: this I attribute to the vinegar being impregnated with the vegetables it had been employed to preserve. I took a few acidulated drops, such as are sold by confectioners, and dissolved them in water in a glass, into which I put a tooth. In three days there was a visible change, but in six days the enamel was destroyed. I made numerous other experiments, and found that acids were certain to destroy teeth in every case, in a greater or less time. I previously mentioned, that in making unfermented bread, eleven and a half fluid drachms of muriatic acid were used, with twenty-two ounces of water, and three pounds of flour; I added a small quantity of muriatic acid to that proportion of water, and placed a tooth in it, and found, that in twenty-four hours the enamel was nearly all gone. I next took the same proportion of acid and water, and added an appropriate quantity of carbonate of soda, bringing the liquid to the same standard as is used in the manufacture of bread; the result was, that in thirty

hours, instead of twenty-four, the tooth had suffered in a like degree. I afterwards took muriatic acid in the proportion of one part acid to ten of carbonate of soda, and mixed it with water; this quantity of soda completely neutralized the acid, so that after some months, the tooth placed in it, remained as perfect as when first put there.

In a popular work on domestic cookery, I found the following—"The teeth may be generally kept clean by rubbing them with a piece of soft wood, made into a kind of brush, and dipped in distilled vinegar." On seeing this, I placed a tooth in distilled vinegar, in a glass; in twenty-four hours the enamel became beautifully white, in forty-eight hours there was no visible difference, at the end of three days there was a very slight deposit of lime at the bottom of the glass, and in five days the enamel could easily be rubbed off. I have seen also in another work of this kind, the recommendation to use dilute sulphuric acid, as a means of cleansing the teeth, and I have met with parties who had actually used such. Some persons use burnt alum, and many of the dentifrices sold at druggists, contain alum and pumicestone.

While residing at Norwich, some twenty years ago, I knew of a dentifrice being sold by a druggist, under the name of rose tooth powder, which, on investigation, proved to be composed of nothing but finely pulverized red brick. From these experiments, I ascertain that all acids will injure the teeth, and we know too, that acids of various kinds are used in ordinary cooking, to give seasoning to the dishes in which they are mixed, and also, that acids are employed in the adulteration of food in daily use; the subject, therefore, is one of very serious importance.

As far as I have proceeded, I have only noticed the deleterious effects of these as *coming into contact* with the teeth; but it yet remains to be considered, what effect acids have upon the system; the teeth being connected with the general organization of the body, may be otherwise influenced than by direct contact. *(Hear, hear).*

From these considerations, there ought to be more attention paid to dietetics, as upon the quality of the substances taken to sustain life, depends the enjoyment of sound health; and from the commencement of their formation the teeth should on this account be studied, as it appears to me the influence of food from without alone causes their decay; and if they decay more prematurely now than is said to have been the case in former ages, this may be accounted for by the injurious effects produced by many of the substances used in the

adulteration of simple food, stimulants to the palate, and other luxuries indulged in. *(Hear, hear.)*

The President then invited the several Members and Visitors present to state their opinions on Mr. Thomson's paper.

Mr. Perkins said, Mr. Thomson appeared to think that all disease in the teeth arose from luxurious living, acids, or adulterated food. Now, he (Mr. Perkins) had lately seen a child, only fifteen months old, who had cut no more than six teeth, namely, four lower incisors, and the two upper central incisors, which last two were very much affected with caries. The child had neither lived luxuriously, nor taken any acid, either in the shape of pickles or anything else. With regard to the hydrochloric acid used with carbonate of soda in the composition of bread, Mr. Perkins conceived, Mr. Thomson must be under a mistake to think that bread so made would have any injurious effect on the teeth, as, if the proportions of acid and soda had been correctly given—and he could hardly doubt but that they had—they would neutralize each other, and form a harmless neutral compound, while the mingling of the two together produced the same effect as yeast. Mr. Perkins thought the adulterating community a very bad set of people; at the same time he considered that Mr. Thomson put more on their shoulders, with regard to decay of the teeth, than they had any right to bear; the pickles, for instance, which Mr. Thomson stated to be adulterated with copper were certainly bad for the stomach, but he was not aware that the small portion of copper used for "greening" them would have any specific effect on the teeth; although the vinegar certainly would, whether genuine or adulterated. Again, with regard to the confectionary adulterated with chalk and eaten by children, Mr. Perkins could not possibly understand how it could injure the teeth, chalk being rather a good thing for the teeth than otherwise; nor could he comprehend how the *undeveloped teeth*, encased in the jaws, could be injured by confectionery, either genuine or adulterated, acid, or alkaline. It appeared to Mr. Perkins impossible that acid taken into the mouth could injure undeveloped teeth with which it never came in contact, any more than it would other protected osseous substances. With regard to the stress Mr. Thomson had laid upon the soundness of the teeth of the ancients as compared with those of the moderns, Mr. Perkins had no satisfactory data from which to form a judgment; at the same time, he conceived there might be a great error in supposing that human teeth were better formerly than at present; one thing

was certain, namely, that much more attention was paid to the state of the teeth at the present time than formerly, and as a natural consequence, bad teeth were now more noticed.

Mr. Purland held that the comparative soundness of the teeth in ancient and modern times, was a subject fraught with considerable interest. From the various researches he had been able to make, it appeared that the respectable classes amongst the Egyptians had very few decayed teeth; and the same observations applied also to the Hindoos. He considered that one of the causes of decay in the teeth arose from the rotary motion of the jaws, which so frequently took place during the hours of sleep, as by this means the approximating edges became fractured, and rendered thereby the more liable to be acted upon by the acids of the mouth. He would classify tartar as one of the helps to caries in the teeth, and also lateral pressure.

Mr. Mackenzie could not agree with Mr. Purland in his observations respecting the grinding of the teeth in sleep, as the cause of their decay; he (Mr. Mackenzie) believing that the rotary motion mentioned was more a preservative than otherwise, as the teeth so affected became polished by attrition, and thus made as it were impervious to decay. He could not coincide with Mr. Purland concerning tartar, as he had found teeth so encrusted quite sound in nearly every case, the substance thus deposited acting as a preservative against the influence of vitiated fluids in the mouth. He considered the cause of caries to be chemical action from without.

Mr. Matthews said, he could not agree with Mr. Thomson's remarks that unfermented bread is injurious to the teeth. When properly prepared, it is suited to such persons as are troubled with dyspepsia. The proportions of acid and soda are so nicely balanced, that injury seems not only improbable but impossible. Hydrochloric acid, well diluted with water, is added to the flour containing a just proportion of soda; decomposition of the acid and soda takes place, chloride of sodium (our common salt) is formed, whilst the hydrogen of the acid is either given off or unites with the oxygen of the soda to form water. Salt is beneficial to the system, preventing putrescence, and unfermented bread can only be injurious when proper proportions of either acid or alkali are neglected.

Mr. Underwood thought, it should be borne in mind, that dental caries proceeded from constitutional as well as local causes. It was a very noticeable fact, that certain teeth in the members of one

family, were often found to be the subjects of caries, whereas, the others were healthy. Diet might certainly exercise an influence upon the teeth; but he considered their decay to be very dependent upon the state of the general health.

Mr. Mackenzie.—Do you allude to diet as a predisposing or a proximate cause?

Mr. Underwood.—As a predisposing cause.

Mr. Matthews would remark, that probably, in many instances, the non-suckling of the infant by the mother, produces delicately-formed teeth. The want of phosphate of lime, as the hardening principle, which is largely contained in human milk, renders the teeth more susceptible of decay. He had observed such to be the case with many of his own patients, and did not know of any artificial food comparable with human milk for the diet of infants.

Mr. Ghrimes could not agree with Mr. Matthews in his observations relating to the use of artificial food, as amongst the lower orders of the people, many children were brought up by hand, and yet possessed excellent teeth. With regard to the relative durability of the teeth, as exhibited in different nations, he could not attribute to the North American Indians that immunity from loss, accorded by Mr. Purland to the Egyptians and the Hindoos. The skulls of the North American Indians had been found upon examination, in many instances, wanting in teeth; but he was not prepared to say, that this did not arise from the celebration of some religious ceremony. He would like to know what kind of muriatic acid Mr. Thomson had used in his experiments, because he believed that used in the manufacture of bread was of a different character.

Mr. Bennett said, that the quantity of acid used in the manufacture of unfermented bread, was regulated by the quantity of soda, so that there should be just enough of the one to counteract the effects of the other.

After a few remarks from Mr. Perkins, the President called upon Mr. Thomson to reply, when

Mr. Thomson took up, "seriatim," the objections of the various speakers, endeavouring to prove his own views correct, and pressing upon the serious consideration of the meeting, the necessity of a more stringent attention to dietetics, believing, as he did, that what was taken into the system in the common course of ordinary diet, was by no means an insignificant cause of that distressing evil—caries in the teeth.

Thanks were then voted to Mr. Thomson for his very interesting paper.

Museum and Library Report, December 1, 1857.

The following is a list of articles which have been presented to the Museum and Library of the College, since the last report, viz. :—

Three ancient Tooth Forceps.—Presented by J. Dixon, Esq.

LIBRARY.

Laurence's Lectures on Physiology, Zoology, &c.—Presented by G. Bartlett, Esq.

Charles James Fox,
Hon. Librarian and Curator.

The following gentlemen were balloted for, and duly elected members of the College :—

E. Robson, Esq. . .	Melbourne, Australia
— Davidson, Esq. . .	Whitehaven
F. J. Cole, Esq. . .	Crawley, Woburn
W. T. Hardern, Esq. . .	Macclesfield
J. Sutcliffe, Esq. . .	Bradford
W. H. Howlden, Esq. . .	Doncaster
R. H. Brooks, Esq. . .	Banbury
J. Faulkner, Esq. . .	Haverstock Hill
R. C. Pilling, Esq. . .	Blackburn

ASSOCIATE.

S. Hoole, Esq. . . .	Pimlico

A paper on Mechanical Dentistry was then read by A. Hockley, Esq., according to the announcement from the Chair, on the occasion of the last monthly meeting.

MR. HOCKLEY ON MECHANICAL DENTISTRY.

Mr. President and Gentlemen.—In presenting to your notice the following paper, which I have entitled, "Mechanical Dentistry," I am aware that I address many gentlemen who have, by their skill

and ingenuity in dental mechanics, greatly assisted in forming a standard of excellence, equal to that of any other country; and I would observe, that I have taken upon myself the task, not from any desire to dictate, but because I think that it will not be inopportune at this period of our session, to bring the subject of this paper before you, in order to review, in as succinct a manner as possible, the present state of mechanical dentistry, how it *is* practised, and how it *ought to be* practised, with the view of securing to our patients those comforts and advantages for which they seek our aid, and which we, as members of an enlightened and honourable profession, are bound to render them in the best manner possible; and also, because, having from the first step towards the founding of this College, entertained an earnest desire for its permanent establishment, and a sincere wish for its ultimate and lasting prosperity, I am desirous of contributing my humble services in any way that may tend, however remotely, to the accomplishment of those objects. Experience confirms me in the opinion, that the annoyance and discomfort, caused by artificial teeth being ill adapted, combined with the injurious materials used in their construction, have greatly tended to bring the wearing of them into disrepute with a considerable portion of the community, and to degrade the *real* dentist—the honest and respectable practitioner, who does justice to his patients by conscientious advice, by the use of proper materials, by good workmanship and skilful adaptation, to the level of the charlatan and the empiric, instead of his receiving the thanks and gratitude of all those who may require his services.

I purpose dividing the subject of this paper into two parts. Firstly, the materials employed in dentistry, and secondly, the application of those materials.

My views, with respect to the materials to be employed, may, to many appear somewhat singular; but as they are the result of experience, and as I entertain a strong conviction that they are sound and true, I do not hesitate to give them. But I do so, with all deference to the opinions of others; well knowing that there are those before me at the present moment, who are quite as well able to pronounce an opinion upon that subject, and by whom, I trust, this important question will be well discussed—discussion being, as I believe, the best, if not the only way, to establish a truth, or detect a fallacy.

In speaking of the materials, I shall confine my observations to those which are in general use among respectable practitioners. They

are, for the plates or base, gold, platina, the teeth of the Hippopotamus and Walrus, Gutta percha, and vulcanised india rubber; (the last-named material, patented by Mr. Goodyear, and introduced by Dr. Putnam of New York, having been but very recently brought to my notice, I shall forbear expressing any opinion of its merits for the teeth), natural and mineral teeth, but principally the latter, of English, American and continental manufacture. Other materials are sometimes used, but as they are unwholesome and injurious to the mouth, their use cannot be too strongly reprobated and condemned.

A great diversity of opinion exists as to the material most proper to be used for bases. Some practitioners consider that bone, on account of its lightness, is best adapted for the purpose, and condemn the use of metallic substances, as injurious to the natural teeth, and detrimental to the general health. Others prefer bone in connection with gold, applying the bone to the lower jaw, as being better adapted for that purpose than gold; bone affording, as they believe, more comfort to the wearer. And again there are others who maintain, that incorrodible materials only should be used, and who invariably recommend to their patients, gold plates and mineral teeth. With this last opinion I fully coincide, and will endeavour to show that only those materials should be employed. But I must first qualify the assertion, that they are *universally* applicable, for I am well aware, that sometimes it may be desirable, nay even necessary, to employ some other material, but then only temporarily.

As it frequently happens that the gums are not in a fit state for the reception of artificial teeth, our first object should be to ascertain their condition; for the teeth, however well adapted, will frequently cause considerable annoyance, if placed over decayed, or diseased roots, the morbid action already existing therein being greatly increased by their pressure, whence arises the necessity for removing the roots and diseased teeth, in order to restore the gums to a healthy condition; but the patient being perhaps unable, or unwilling to wait the necessary time for their proper absorption, a period of from six to twelve, or fifteen months—and before which metal ought not to be applied—it becomes necessary to provide a temporary set in the meantime; and then, either bone or gutta percha, from the ease and facility with which it can be worn and altered to the changing form and structure of the gums, is peculiarly applicable.

As, therefore, the objections to bone and gutta percha apply to their use when the gums are in a healthy condition, the following ob-

servations will address themselves principally to those who in practice advocate the general use of those materials.

I will now state what are the objections to bone, and will then prove, that gold is, in every respect, and for all cases, except the one I have mentioned, greatly its superior.

Bone being composed chiefly of phosphate of lime and cartilage, *must* be acted upon according to the variable conditions of the saliva, and the secretions of the mucous membrane which lines the mouth. Thus, during health, when the saliva is slightly alkaline, and the secretions of the mucous membrane are slightly acid, the alkalinity of the former neutralising the acidity of the latter, the bone is little affected; but in certain conditions of the general health, the saliva changes its character, and various acids may be detected in it, most of which are capable of decomposing the bone by virtue of their affinities for some of its constituents. And as bone, from its permeability, is readily acted upon by the fluids of the mouth, it very shortly discolours, and by its decomposition, which afterwards takes place, is rendered exceedingly offensive from the disagreeable odour which it imparts to the breath. These are, in my opinion, the chief objections.

The next objection has reference to its effects upon the natural teeth; though, in that respect, many dentists believe that it is less injurious than gold. I admit that metal clasps have, to some extent, a bad effect. But what in the one case can be easily avoided, cannot in the other be remedied; for when a bone piece has been some time in wear, it diminishes in size, leaving between it and the adjoining teeth a space, in which is accumulated food and other matters, highly prejudicial to the natural teeth. This is not the case with gold, for if the bands are closely fitted, all extraneous matter will be excluded. Again, if, as has been pretty well decided, that caries of the teeth is produced by vitiated saliva, the bone, by imbibing the acids of the mouth, will concentrate within its pores the very cause of that disease. There are yet two more objections to its use, namely, that by attrition the grinding surface of the bone becomes worn down, rendering mastication imperfect; and that, in lower pieces, when the bone passes behind several front teeth, and in some cases requires to be very thin, it is extremely liable to fracture; now I think it must be admitted, that gold is entirely free from all these objections. Of gutta percha I cannot venture a decided opinion. I have used it several times, but with varied success. In some cases it has answered very well. In

others the surface has become abraded, to which the saliva and food has adhered, making it exceedingly disagreeable and disgusting, both in wear and appearance. I am, however, disposed to think, that its purity, and the mode of preparing it, has greatly to do with its success; and, in justice to Mr. Truman, who brought its use prominently to the notice of the profession, I feel bound to say, that in those cases in which its application was most successful, it was prepared by that gentleman.

I must now speak of incorrodable materials, and their adaptability on every occasion. Of the metals, gold is acknowledged by all to be the best. It is hard, and owing to its ductility can be fitted to the gums with the greatest accuracy, and when alloyed in proper proportions, is not affected by the secretions of the mouth.

The lower jaw presents the greatest obstacle to the use of gold as a base for artificial teeth, the gum in some cases being very sharp angular, and in others scarcely perceptible, while the mucous membrane which lies around it, renders it exceedingly difficult to construct a plate that can be worn without irritating, or pressing on the soft parts of the gum. But these obstacles may be surmounted by a method of working which I have found to answer remarkably well. It is probably adopted by many of you here; but as there may be others who have found some difficulty in such cases, I will, at the risk of appearing tedious, endeavour to explain it.

In taking an impression of the lower jaw, extend the wax as far back as the coronoid processes. After procuring a plaster model, trace upon its surface the hard portion of the gum, and, to one acquainted with its structure, this will not be difficult; or it can be traced out by comparing the model with the mouth of the patient. Then cover the soft parts of the gum, as represented on the model, with wax, or plaster of Paris, of about the thickness of a shilling, leaving only the harder portion of the gum untouched and exposed to view. From this model take the metal casts, and then fit the gold plate, which should be thick, accurately to the model, the plate being made as wide as the form of the gum will admit, and extending as far back as possible. On removing the wax, or plaster, from the model, you will perceive that the plate rests entirely upon the hard unyielding portion of the gum, and leaves untouched the delicate tissues around it. It is desirable in some cases to solder a piece of gold wire along the inner surface of the plate, in order to prevent the edges from injuring the soft structures of the tongue. A gold plate thus constructed,

while it confers all the comforts of bone, possesses over that material the great advantages of cleanliness and durability.

Respecting the teeth employed, there can be no doubt, that mineral have, to a very great extent, superseded the use of natural teeth. Five-and-twenty years ago, the teeth principally used by dentists were natural, and those carved from the enamel of sea-horse-teeth; the mineral teeth then in use, were the flat or shell teeth of French manufacture, which, although uniting strength with durability, and being suitable in many cases, found little favour with the profession, as they were, from their form and colour, and general want of resemblance to the natural teeth, easily detected; but thanks to the ingenuity and perseverance of Messrs. Ash and Lemale, who, I believe, were the first to manufacture mineral teeth with metalic tubes, we have now teeth which, for beauty of finish and close resemblance to natural ones, cannot be surpassed. There is however, one important consideration in employing mineral teeth, namely, their want of strength, for there is nothing causes more anxiety, both to the patient and practitioner, than their liability to break; and as opinions are somewhat divided as to the relative strength of the teeth of the various manufacturers, I shall at present refrain from giving mine, hoping to hear that subject fully discussed by those present.

I will now briefly describe the various methods of fixing artificial teeth: these are by pivoting, by clasps attached to the natural teeth, by spiral springs, and lastly, by suction or atmospheric pressure. The subject of pivoting having been recently brought to your notice in the very able paper by Mr. Perkins, I will only remark thereon, that under favourable circumstances it is undoubtedly the best method, for, when properly applied, the patient is unconscious of wearing artificial teeth.

In adjusting a piece with clasps, it is of the greatest importance that the plate should fit accurately to the gum; and if the clasps are made wide and fitted correctly, they will exert an even pressure upon, without injuring the teeth to which they are attached, and the patient will be enabled to remove the piece without any difficulty. When the plate is not fitted correctly to the gum, its principal support lies in the clasps fastened to the adjoining teeth, whereby an undue pressure is exercised upon those teeth, frequently causing inflammation of their periosteum, and ultimately loosening them. I have seen pieces of teeth, to which every available fastening was applied with

a total disregard as to their being either necessary or suitable, clasps and wires being applied between and around every tooth when possible. This is a most injudicious practice, for as it is quite impossible that pieces so constructed can be removed, as they ought, frequently, in order to their being properly cleansed, the teeth and gums must thereby be greatly injured.

A few remarks must now suffice on the methods of fixing by means of spiral springs, and the suction, or atmospheric principle. In cases where the teeth are entirely removed from the upper and lower jaws, or those remaining are such as cannot be depended upon for support, it is usual to adopt one of these methods. Each of them no doubt has its peculiar merits and defects. But the objections which are sometimes made to spiral springs as causing inconvenience and too great pressure upon the jaws, I think are untenable, for if the plates are correctly fitted to the gums, and the teeth properly adjusted to the bite, a very light pair of springs will suffice to keep the set in its proper position, and the pressure from them will be scarcely perceptible.

Sometimes an upper piece only is required, the teeth of the lower jaw being perfect; we are then compelled to construct a plate which shall fit with such accuracy as perfectly to exclude the air from between it and the gum. In the general arrangement of these pieces, the plates are made to cover the entire gum, and a considerable portion of the roof of the mouth, which for some time affects the sense of taste, and causes considerable discomfort to the patient. I have, however, in a great measure, succeeded in remedying this, and at the same time causing the plate to adhere with sufficient tenacity, by making it to cover a smaller portion of the surface of the gum than is usually done when fixing plates on this, the suction or atmospheric principle; and if plates fixed by this means, could be made to retain their position as well as those fixed by spiral springs, they would possess a great advantage over the latter by reason of the liability of the springs to break.

In these remarks, I have confined my observations principally to the replacement of natural teeth by artificial substitutes; but there are cases in which the skill of the dentist is frequently exercised, even to a greater extent than in those upon which I have treated, such as the arrangement of pieces for correcting irregularities of the natural teeth, and which require to be constructed with extreme delicacy and finish, the construction of artificial palates, and the me-

chanical arrangement necessary to replace the loss of portion of the upper or lower maxillar. Time will not permit me to do more than mention them; but I may be allowed to express a hope that gentlemen will, from time to time, come forward, and by reading papers on those subjects, give us the benefit of their knowledge and experience.

I cannot conclude this paper without remarking on the great importance of finishing our work in the best possible manner; for although it may be, and I believe is, considered by some that the finish is of little consequence provided that the fit is perfect, I do not consider that even perfection, if it could be attained, in the one case, is a sufficient excuse for negligence in the other. Undoubtedly, correct fitting is of the first importance, but were that combined with excellence of workmanship and beauty of finish, the piece or set would be made more acceptable to the patient, give greater satisfaction, and be valued accordingly. *(Hear, hear).*

Although we may admit the claims of mechanical dentistry to be considered as one of the most important branches of the general science—if, indeed, it is not the *most important*—we must remember, that that alone does not constitute the education of the dentist.

The inauguration of this College commenced a new and, I may say, a great era in the practice of dental science in this country; and when we consider the great advantages which may, and let us hope, will, be derived from this institution—by reason of its offering to members of the profession, and their pupils, the means of acquiring a thorough knowledge of all the sciences bearing upon and connected with dentistry, we may not unreasonably expect corresponding results.

Let us not, however, forget our obligations to some of the earlier practitioners in the science, the pioneers of the profession; but rather let the recollection of what they have done excite in us a desire always to excel; let perfection in every branch of the profession ever be our aim; and then will the College of Dentists of England be enabled to take its stand, and fearlessly to maintain its position, with the other learned and liberal institutions of the country.

DISCUSSION.

Mr. Harley gave the preference to bone, which he conceived was admirably adapted for general purposes in mechanical dentistry. He had formed his opinion upon long experience, and found that he had

been able to use this material, with the best results, in the large majority of cases. He would like to ask Mr. Hockley what metals he most frequently used in the making of models for the purpose of working his plates?

Mr. Perkins considered bone an excellent material for the manufacture of bases for artificial teeth intended for *permanent* use. He could not agree with the notion that bone work was so liable to decay as Mr. Hockley had stated; at any rate, in some cases, it lasted a long time, as he was able to testify from an instance which he then remembered; the patient to whom he was alluding having worn a piece for eight years, and which was not sensibly affected even after that lengthened time. He was also of opinion, that the bone shrinking, or wearing away from the teeth, round which it had been worked, as had been specified, was by no means true in every case, nor to be expected as a general rule.

Mr. R. Hepburn gave the preference to cases made of gold mounted with mineral teeth in the upper jaw, and bone sets in the lower. Allusion was also made by Mr. Hepburn to the valuable assistance afforded to the practitioner by the introduction of gutta percha as a lining for gold plates, more especially in instances of absorption of the alveolus, where a constant change of the gums and general aspect of the mouth was taking place. In such cases, the plate having been made, and the gutta percha applied in the ordinary way, any change in the mouth may be met by the simple softening of the gutta percha, and so continued until the gums have assumed a definite form, when the permanent set can be manufactured. In order to better explain this, Mr. Hepburn related an instance which occurred in his own practice, where he had successfully, and with the least possible inconvenience to the patient, retained the plate in the mouth, during the process of alteration in the form of the gums.

Mr. R. Thomson considered the use of bone, especially in the under jaw, very objectionable; and related a case in which it appeared, that the ivory employed had suffered materially from rapid decomposition.

Mr. Underwood coincided with the use of bone in the lower jaw, as its applicability, in very many instances, had been abundantly proved in his own experience. He had no hesitation in giving the preference to bone for under pieces, wherever it could be employed.

Mr. Turner offered some remarks upon the subject before the

meeting, and concluded by desiring to know, by what means bone could be applied with a lightness equal to gold?

Mr. Fox mentioned Mr. Jacobs's gutta percha as an excellent lining for gold plates.

Mr. Rymer agreed with Mr. Perkins, preferring gold and mineral teeth in the upper, and bone in the lower jaw, and would wish to know, whether Mr. Hockley would object to the use of bone, when thus employed, in contact with mineral teeth?

Mr. Mackenzie considered bone in the lower jaw, and gold mounted with mineral teeth in the upper jaw, objectionable, on account of the action of the hard mineral, the result of which was an undue wearing away of the bone at the various points of contact, thus producing a vacancy where the grinding surfaces should antagonize closely. He had never found any difficulty in using mineral teeth in both upper and lower jaw; in fact, that was his practice, and it was attended with the best results.

Mr. Jacobs coincided with Mr. Mackenzie, and considered it very important, that the grinding surfaces of the teeth should be made so as to preserve the closeness of contact, and he invariably used mineral teeth in both jaws.

Mr. Purland objected to the use of mineral teeth, as stated by the last two speakers, on account of the disagreeable noise produced in the collision of two substances so hard as that of which manufactured teeth were composed, and always preferred using bone in the lower jaw.

Mr. D. Hepburn thought that there could be no specific rule laid down for the application of any material to be employed in the mouth, believing that, what was suitable and admirably adapted in one case, would be exactly the reverse in another. He considered that herein the skill and judgment of the dentist was called into play, and only by close investigation, and constant application, could the practitioner hope to come to a decision on the important matter of selecting the most appropriate material for his patient's use. *(Hear, hear).*

The President having called on Mr. Hockley to reply, he rose, and after replying to the questions of Mr. Harley and others, thanked the members for the kind manner in which they had received his paper; and although the only subject discussed was the relative advantages of gold and bone, he was compelled to admit, that from their remarks thereon, his views were much modified; but he pledged his honour, that they were those which he considered correct, and which he always adopted in practice. He did not mean

to say that he never used bone, for in many cases, where patients had been accustomed to that material, they generally preferred it to any other; but its durability was very variable; in some cases, bone had lasted but a very short, and in others a considerable, time: he mentioned one in which a set of sea-horse blocks had, in less than twelve months, become perfectly black, and so decomposed, that, by pressure, the saliva exuded from them, if he might so use that term, as from a sponge; while, in another case, he had seen a set of teeth which had been in wear upwards of eight years, which, with the exception of a dark brown discoloration, were as good as when first made. It was the uncertainty attending the use of bone which led him to believe, that gold and mineral teeth were the proper materials to be used, and by the method he had employed of fitting it in lower cases, he had met with complete success. If the dentist brought to his aid the science of chemistry, some excuse might be found for the use of bone, as he would only employ it when, from the condition of the saliva, it was most suitable. With respect to cases of considerable absorption of the gums, referred to by Mr. Perkins, it was true they required considerable trouble, as the plates had to be raised, or boxed up, in order to make up the deficiency; but in some of the cases in which he had made them in that manner, he had rendered a service to his patients, as bone decomposed very quickly, and they could ill afford to have it renewed. With respect to cases which require long teeth, he had adopted a plan to prevent their breaking, which he would explain more fully, should that subject be brought before them on a future occasion. In conclusion, he repeated, that the method he had laid down in his paper, he adopted in practice; if they considered there were any errors in it, they must attribute them to errors of judgment.

A vote of thanks was then passed to Mr. Hockley, for his very excellent paper.

DENTAL SURGERY AND MECHANICS.

THE ADAPTED FORCEPS, BY J. ROBINSON, ESQ.

(Continued from page 280).

MOLARS are much more firmly articulated, and having diverging fangs, require a much greater amount of mechanical force for their extraction.

When the proper-sized forceps have been selected, they should be applied as high up under the gum as possible; the force to be used should first be external, then internal, and so on in quick succession; the greater amount of force should however be given to the outward movement rather than to the inward, or otherwise one or both of the buccal fangs of these teeth are likely to be fractured, particularly if either are curved at the apex of the fang; during these alternate and lateral motions, the operator must not forget the necessary perpendicular action: the alternate motions being designed to separate the tooth from the adhesions to the alveolar process, whilst the downward, or perpendicular action is to draw it from the socket.

The DENTES SAPIENTIÆ are extracted by movements similar to those employed for the first and second molares, with this exception, that these teeth being situated at the angles of the jaw, and their fangs not being generally so deeply seated in the socket, the operator should use a greater amount of force externally during the operation of extraction. He should also be particular when he applies the forceps, to observe that they are forced *well up under* the gum, and be careful that in his application of his instrument, that he does not enclose the gum and alveolar process either externally or internally within the beaks of his forceps; if so, it is more than possible a large portion of alveolar process will be brought away with the tooth, which may be followed by a protracted hemorrhage, frequently difficult to arrest, as it is within the immediate vicinity of the dental canals and artery. Moreover loose portions of bone will invariably remain, producing intence local sufferings from inflammation, suppuration and exfoliation.

CENTRAL INCISORS, LOWER JAW.—Having in the preceding observations confined my description to the extraction of teeth from the upper jaw, I will now commence with the four central incisors of the lower jaw, premising that I differ from other practitioners as regards

the shape of the instrument to be used for these teeth. As most Dentists, both in England and America, use small straight-beaked forceps, I prefer the narrow-beaked hawk's-bill, excepting in those cases of irregularity, when either of these teeth are developed within or without the dental circle; in such cases the narrow pointed straight forceps should be employed. The proper instrument having been selected and applied to the tooth to be extracted, the alternate, lateral, and *strong* perpendicular motions should be used for their extraction, taking particular care, however, in the selecting the forceps, that the beaks are not too wide to cause injury to the adjoining teeth.

Canines and Bicuspids.—Either of these teeth can be extracted in ordinary cases with the proper-sized hawk's-bill forceps, the motions being precisely the same as the preceding.

In deeply-seated stumps of these teeth, hollowed out by caries, or where only a small portion of the crown remains, to resist the pressure of the instrument, the use of the elevator becomes necessary, which I shall more particularly describe hereafter.

The Molares.—These teeth require the alternate lateral and perpendicular movements for their extraction; the external more particularly should predominate, inasmuch as the external alveoli plate being thinner, yields more readily to the force applied.

Dentes Sapientiæ.—These teeth generally are easily removed with the proper forceps, particularly when well developed, and a sufficiency of crown appears above the gum to admit of a firm grip with the instrument. The motions should be alternate and lateral, combined with a slight perpendicular and horizontal action. As these teeth are usually developed at the angle, or curvature of the jaw, the fangs are frequently curved, and turned towards the coronoid process.

In many cases that occur in practice, and particularly those in which one side of the tooth has been destroyed by caries, the use of the forceps becomes uncertain; in such cases I prefer using the elevator, to running the risk of a fracture with the forceps, and afterwards being compelled to have recourse to the former instrument; in fact, many cases will present themselves to the pupil, in which the buccal side of the crown has been destroyed by caries, where the key instrument can be used with satisfactory results, the fulcrum of the instrument being placed upon the buccal side of the tooth.

These teeth are frequently curved in their fangs, and developed in mal-positions in the jaw, and being in the immediate proximity of the inferior dental artery, render hemorrhage very common after extrac-

tion; and several cases have been reported in which fatal results have followed their extraction; but of these I shall more particularly refer, when speaking of the styptics employed, and the mechanical treatment for arresting dental hemorrhage.

SOME CASES THAT OCCUR IN PRACTICE.—In the upper jaw, supernumerary teeth will be developed, either between the central incisors, or high up in the anterior part of the palate; they are generally cone-shaped, with a single fang, and are easily extracted with a pair of straight forceps—the same mechanical movements being employed as those used for the extraction of the upper centrals and laterals. In some cases the upper canines are occasionally externally developed high up in the alveolus, disfiguring the contour of the face; in many cases mechanical ingenuity has failed in bringing them into a regular position, particularly if they have been developed late, and made their appearance immediately over the laterals, the bicuspids having arranged themselves by the sides of the former, their extraction in many such cases becomes an imperative necessity. Fig. 1.

fig 1.

When the crowns of these teeth have protruded sufficiently through the gum to allow of a firmer grip, they can be extracted by a strong but finely-pointed straight forceps in the usual way, the operator taking particular care to run the points of his instrument well up under the gum so as to obtain as firm a grasp as possible.

In making the alternate lateral motions, the external should predominate with the perpendicular, to prevent injury to the gum and the teeth beneath these irregular teeth.

Occasionally the second bicuspid will make its appearance within the palatine arch, its labial surface being closely in contact with the first bicuspid and first molar, leaving no room for the insertion of our ordinary forceps.

To meet these cases I have constructed the forceps figured at page 157 in this Journal, the finer beak of the forceps being intended to pass up, and between the molar and first bicuspid, while the inner or

palatine beak is of the usual breadth, and embraces the palatine neck of the tooth. These forceps are intended for the left upper jaw, but the same instrument is also applicable to the right side of the lower jaw under similar circumstances, as shown at page 157.

In the lower jaw, it will frequently be found, that one of the incisors has been developed within the dental circle thus, fig. 2, the adjoining

fig. 2.

teeth being closely arranged in regular order, the irregular tooth is not only disfiguring, but it causes an obstruction to the free movement of the tongue, and its removal becomes an absolute necessity. For this purpose, as I before stated, the narrow, but strongly pointed forceps should be used, fig. 3, the operator standing behind his patient and

fig. 3.

supporting the chin with the left hand while using the ordinary motions for extracting. If the point of the forceps will not embrace the anterior neck of the irregular tooth, owing to its close proximity to the posterior surfaces of the other incisors, the operator must use a pair of forceps more bowed than those figured, so as to clear the cutting edge of the tooth, and grasp the tooth sideways close down to the gum, taking care however, not to use too great a pressure when he applies the instrument, or the tooth may be fractured, rendering the subsequent operation both difficult and tedious.

The canines in the lower jaw are sometimes developed without the dental circle, and in cases where their position is low down so as to disfigure the contour of the mouth, without the possibility of being brought into regular order by mechanical means, their removal should be at once decided upon. If there be sufficient space between the anterior surface of the incisor or first bicuspid, and the posterior surface of the irregular tooth, the operator should use the fine straight pointed forceps, or the narrow-beaked hawk's-bill; if the former, his

position for operating should be behind the patient, supporting the chin with his left hand The motion should be external and perpendicular, carefully avoiding an inward movement, and the consequent injury to the adjoining teeth. If the hawk's-bill be employed, the operator should stand in front or on one side of his patient. If the posterior surface of the irregular tooth be in contact with the other teeth, so as to prevent the application of the instrument in that manner, the straight-bowed pointed forceps, or the hawk's-bill, can be applied laterally, using the alternate lateral and perpendicular motions, steadily, but firmly. The same teeth when developed within the dental circle and their removal necessary, they can be extracted by a similar movement, the straight forceps being usually employed. The bicuspids when protruding externally through the gum, and low down in the alveolar process, can be easily removed with the hawk's-bill or the straight or curved forceps. When developed internally the instrument I have previously referred to can be employed.

The fangs of the first and second molars in the lower jaw, are sometimes, from caries or from accidental fracture in operating, are left in the jaw to within a line of the edge of the gum, frequently retaining a small portion of bone, uniting the two fangs, but not sufficient to withstand the pressure of our ordinary forceps, so as to ensure the extraction of both fangs at once. The following exhibits a section of a first, second and third molar, the second having been fractured, fig. 4; in such cases I have frequently divided the fangs

fig. 4.

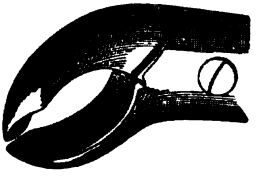

fig. 5.

with these kind of forceps, fig. 5, which it will be observed has two cutting spines meeting within a half a line or so of each other, the other parts of the beaks being grooved in the same manner as the ordinary lower forceps; the object of which is, whilst using the instrument for dividing the fangs, and cutting through the alveolar border, one or both fangs might be removed at the same time; if not they will be loosened in the socket, rendering their extraction comparatively easy with either the elevator or bent forceps.

DENTES SAPIENTIÆ.—The first and second molars seldom present any difficulties to their removal from the irregularity of development; but the third molar, or Dentes Sapientiæ, are frequently only partially developed, and in such positions that present insurmountable obstacles to their extraction, either by our ordinary extracting forceps, or by the elevator. In many cases in which there is not a sufficiency of room in the jaw to admit them, and from the continual suffering of the patient, the general health is likely to become impaired, and continue so from this source of local irritation—the extraction of the second molar becomes necessary after every other local remedy has failed, such as free incisions of the gum, leeches, poultices, &c.

In those cases where a *partial* development of the crown has taken place, and the remaining permanent teeth have been fully developed, and arranged in their proper position, leaving no room for the *dentes sapientiæ*—without crowding and disturbing the whole denture—the operation of extraction should be immediately performed, by first making a free incision of the gum *transversely*, at the posterior part of the tooth, and around its neck, and with the elevator firmly inserted between it and the second molar, the tooth can be gently raised from the socket, to allow of its removal by the ordinary forceps.

If not readily detached, the instrument should be forced backwards towards the posterior part of the jaw, for should any malformation of the fang exist, this action will not only materially assist in its removal, but will prevent undue laceration of the gum

The following drawing represents a lower dens sapientiæ with a curved fang.

Again, these teeth will be found occasionally developed high up, and external to the alveolar ridge, the labial surface of the crown being only perceptible to the operator: in such cases the gum should be freely separated from the remaining part of the tooth, and the tooth either raised from the socket, or extracted with the elevator in the same manner as in the case last described. When one of these teeth pierces the gum, on the inside of the alveolar ridge in the lower jaw—obstructing the tongue in its free action, and the crown has

become sufficiently developed above the gum to admit of a firm grasp around its neck, the ordinary forceps are best adapted for its removal —using *less* internal lateral *than* external and perpendicular action.

Should, however, the crown be imperfectly developed through the gum, or destroyed by caries, I would recommend the pupil to freely scarify the gum around the tooth, and extract it with the elevator in the ordinary way: taking care, however, that the point of the instrument is inserted close to the second molar, and down to the edge of the alveolus, to prevent its slipping: to guard against which, the the index finger of the other hand should be wrapped in a cloth, or protected with lint, and placed against the linguinal surface of the tooth to act as a guard, and in case of slipping to receive the point of the instrument, and thus prevent injury to the surrounding parts. There are also many other malformations of the fangs of teeth, which more or less impede their ready extraction; many of these are very difficult, and usually prolong the operation, and are generally perplexing and annoying to the student.

The following drawings exhibit a few of the cases in question:—

Fig. 6.—The roots of a first molar extracted from the lower jaw, after the crown had been broken off, and in which the fangs were curved and united at their apex, with an opening between, through which the transverse process passed.

Fig. 7.—Upper dens sapientiæ with three fangs—the palatine fang being curved.

Fig. 8.—Upper dens sapientiæ with four fangs.

Fig. 9.—Upper molar with four fangs, the buccal being united and curved at their apex.

Fig. 10.—Lower molar with diverging fangs.

Fig. 11.—Temporary lower molar with diverging fangs.

Fig. 12.—Upper dens sapientiæ with four fangs.

Fig. 6. Fig. 7. Fig. 8. Fig. 9.

Fig. 10. Fig. 11. Fig. 12.

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DENTISTS APPOINTED TO THE LONDON HOSPITALS.

London Hospital	H. J. Barrett, Esq.
Charing Cross Hospital	T. Roberts, Esq.
University Hospital	H. Shelly, Esq.
Middlesex Hospital	J. Tomes, Esq.
Royal Free Hospital	J. Robinson, Esq.
Guy's Hospital	Messrs. Bell & Salter
King's College Hospital	S. Cartwright, Jun. Esq.
Westminster Hospital	J. C. Clendon, Esq.
Great Northern Hospital	C. J. Fox, Esq. John Lee Statham, Esq.
Foundling Hospital	A. J. Woodhouse, Esq.
London Fever Hospital	*No Dentist appointed*
Royal Westminster Opthalmic Hospital,	*No Dentist appointed*
St. Mary's Hospital	Edwin Sercombe, Esq.
St. George's Hospital	C. Vasey, Esq.
St. Thomas's Hospital	J. Patient, Esq.
St. Bartholomew's Hospital	— Tracey, Esq.
Royal Infirmary for Children & Women,	A. Canton, Esq.
Hospital for Consumption, and Diseases of the Chest, Brompton	*No Dentist appointed*
Hospital for Sick Children	S. Cartwright, Jun. Esq.
The Islington Dispensary	W. Catlin, Esq. — Fish, Esq.

In addition to those in the above list there are many other dental appointments to various public charities in the metropolis, which we could not correctly ascertain. Independently of these institutions, there are the provincial hospitals and dispensaries in England and Wales, the hospitals, dispensaries, and other public charities, in Scotland and Ireland, all of

which we have been obliged to omit in consequence of the want of correct information. We shall, therefore, feel much obliged to gentlemen holding appointments, and who are not named in the foregoing List, in any hospital, dispensary, public school, or charity of any description, if they will favour us with their names, etc., for publication in the next number of our Journal. [ED.]

A DIGEST OF THE CAUSE OF CARIES OF THE TEETH.

By DONALD MACKENZIE, ESQ.

(Continued from Page 285.)

The reason of the handle being hollow is, that the steel rods, which are cut off four inches long, are continually being shortened, as the points are reconstructed to suit different cases. Being thus provided, I operate upon the inside of the tooth at once, selecting a file sufficiently large, not to enter the decayed cavity, but to bear upon the inner edge of the opening, which, by a rotatory motion, I continue to reduce until I have extirpated the whole of the caries, and formed the place, so that food, the tongue, and a brush formed for that purpose, combine to keep it free from all extraneous lodgments; and I order rigid and frequent use of the brush to the part, so as to facilitate the porcelain deposit. If the tooth has not lost its vitality, and the operation is skilfully performed, combined with adherence to directions, a permanent cure may with certainty be relied upon.

The advantage I have found in this method over the usual plan is, that the tooth retains its natural size and form in front; for it is worthy of remark, that when caries affects the front teeth, its attacks are more confined to the inner than the outer surface. After this operation has been performed, it is seldom possible to detect that caries had ever been present. And so confident have I become with long practice, that I never think of stopping lateral openings in front teeth, unless under the most favourable auspices, from the conviction that the file is the most certain in its curative effects; for, unless the stopping can be so perfectly secured that all moisture is excluded from the cavity, the stopping becomes a source of destruction rather than cure, by retention of moisture *in situ*, until its action becomes corrosive, which is the proximate cause of decay in the teeth themselves, whether affecting the sides of the front teeth, or the masticating surfaces of the grinders.

My treatment of the bicuspidati differs somewhat from that of the front teeth, although based upon the same principle.

When caries exists between any two of the bicuspids, having ascertained by means of a probe which of the teeth is most affected, I proceed to separate them with an acute-angled-shaped file, termed a razor-file, bearing principally against the most affected, until enabled to ascertain the amount of damage done. I have also then an opportunity of judging whether the whole cavity may be removed by the file, or that it may be partially filed and stopped; for, as I before mentioned, unless the cavity can be formed so as to have a sufficient grasp of the stopping, to preclude its ever getting loose, it will be productive of mischief.

Should it not be suitable for stopping, it is better to proceed with the file until a sufficient space has been made to allow the ingress and egress of food. Should a small hollow still remain, it must be finished with a suitable rifler, being careful that the whole of the decayed bone is removed. As it almost invariably happens, that both teeth are affected when decay takes place between them, the opposite tooth should be examined, and, if decayed, treated in the same way. There is no fear of decay again occurring on the filed part; the chance of recurrence is near the gum, where extraneous corrosive substances may be apt to lodge. The greatest attention should be devoted to polishing the filed surface with a stick suitably pointed, and powdered-pumice-stone. As there is little doubt but that caries is the result of external agents, this knowledge would lead us to the conclusion, that scrupulous care in cleaning the teeth perfectly would prevent decay, in the same ratio as we find it successful in preventing its recurrence when the teeth have been filed; and I consider that, in cases where there is a disposition to decay in the teeth, that properly advised liquid washes are more suitable than powders, as they can be so compounded as to alter any deleterious constituents present in the principles of the saliva; and that properly adapted brushes should be used to clear the spaces between the teeth of all extraneous matter; also that the crowns of the teeth should be carefully cleansed, with a view of preventing caries commencing there.

My own opinion* with regard to the formation of decay is founded upon the endosmotic phenomena which I suppose to be taking place in the structure of the tooth. Thus, as no blood-vessels are traceable into the texture of the ivory, I conceive that the animal part of this structure derives its nutrition from the colourless liquor sanguinis im-

* Lintot on the Teeth, *page* 45.

bibed by the tubuli from the vessels of the pulp. This mode of nutrition is seen in various tissues of the body, as for instance in cartilage, in the cornea, &c. That the tissue of the tooth is imbued with fluid, is evident from its solidity and colour; and also from its difference of weight in the fresh and dried state. This fact may be easily illustrated by immersing a dried tooth in water, when it is observed to absorb a considerable proportion of the water, and become materially changed in its density.

Now I think that I am warranted in inferring, that the nature of the fluid permeating the tooth from the vessels of the pulp is, in the normal state of the system, always similar.

On the other hand, the crown of the tooth may be regarded as being immersed in the salivary fluid by which it is constantly surrounded, and, as we know, this fluid undergoes a change from alkaline to acid by simple exposure to the influence of atmospheric air within the mouth. Again, from containing a large proportion of nitrogen, the saliva is constantly subject to a change in character from decomposition; and, lastly, the fluids of the mouth are obviously very much affected by the state of the stomach, and disease of various kinds.

Now, in the above statement we have the precise conditions which are best calculated to induce an active endosmosis; an alkaline fluid contained within the tubular texture of the tooth, an acid fluid externally, the two being separated by an animal tissue. To question the existence of endosmosis under such circumstances would be to dispute the first principles of physiological science. But what, asks my reader, are the results which I deduce from my positions? They are important, and the following. In the first place, it is by this process that the colour of the teeth is altered in disease;—that they become yellow and discoloured during illness, by the transudation of endosmosis of discoloured and morbid fluids. And by the same process they are capable of regaining perfectly their original and wonted whiteness.

Secondly, I regard this endosmosis as the means by which the calcareous matters are first dissolved, and secondly removed in a state of solution from the tubuli, leaving behind only the animal texture of the ivory, and thus establishing decay. I may be asked why, admitting my proposition, the decay should be localized to a single spot? Why should not all the tubes be affected similarly and simultaneously? My reply is, that the part most likely to be attacked,

and that which under the above circumstances I believe to be affected, is one which is already placed in a morbid condition, either by imperfection of development, or by injury to the tubular structure from pressure, &c.

The first indication of the existence of decay of the ivory of the tooth, is a slight discoloration, which is perceptible through the semi-transparent enamel.

Decay progresses much more rapidly in some individuals than in others. The bone becomes softened by the removal of the earthy or calcareous part, leaving the organic or animal part behind, and is destroyed in a direct line from the surface towards the centre of the tooth, in the course of the tubuli. The base on which the enamel rested is thus removed, some accidental pressure in masticating bears upon the spot, the enamel breaks down, and a cavity is suddenly found to exist in what had probably, hitherto, been deemed, by the unsuspecting owner, to be a sound tooth.

If the disease has proceeded far towards the centre, the dental cavity becomes partly or entirely exposed, inflammation of the lining membrane and pulp takes place, and *true* toothach is the immediate result.

Decay makes its appearance most frequently beneath the grinding surfaces of the molares, and on the sides of the teeth, where they come in contact with their neighbours, or where they are so formed as to offer a favourable lodgement for portions of the food. It also, occasionally, attacks the neck of the teeth, but is scarcely ever found on the roots.

Having once established itself, its destructive effects on the ivory of the tooth are extremely rapid ; the enamel losing its support, crumbles away piece by piece, until the roots alone remain : the vitality of the whole of the ivory being then extinct, the disease appears to have expended itself, for the roots, though dead, and extraneous bodies *as regards the ivory*, will remain firm for years in the gums and alveolar cavities, affording a considerable degree of support to the adjoining teeth, and whilst in this state they should on no account be disturbed.

It must have attracted the attention of every practical dentist, as well as of myself, that one situation in the tooth is remarkably subject to decay; I allude to the deep groove which exists upon the surface of the crown of the molares, and forms the line of separation between the tubercles. The first indications of decay are almost constantly perceived in this situation, and in the course of a groove

which is frequently found on the outer side of the first molar of the lower jaw.

In reasoning upon the probable cause of the frequency of decay in these situations, I was at first led to infer that the diseased action must depend upon the collection of fluids, and upon the decomposition of alimentary matter in these grooves. But I must confess that this explanation, although undoubtedly partly applicable to the morbid process, was far from satisfactory, when I reflected that the decay occurred as frequently in the teeth of the upper as of the lower jaw;—that it affected several teeth simultaneously;—and was not unfrequently absent in the lower, while it was present in the upper teeth.

Finding, from repeated observation, that in teeth affected in the manner above described, the structure of the enamel was unnaturally brittle, and that the disease followed very accurately the line of the depressions on the crown, I was led to the opinion that the extreme susceptibility to diseased action must depend upon defective formation in this part of the tooth; and farther investigation has served to convince me that this is really the case.

The mode of formation and growth of the tooth described by Mr. Goodsir, throws considerable light on this point, and affords an explanation of the phenomenen, which to my mind is perfectly satisfactory.

By referring to Mr. Goodsir's explanation of the production of the form of the upper surface of the crown of the tooth, it will be seen that this depends upon the development of a number of opercular processes corresponding with the number of the tubercles of the tooth. These opercula meet at a line corresponding with the future groove upon the crown, and at this point become joined and continuous with each other, so as to constitute a single membrane, by the vessels of which the enamel fibres are secreted. Now, if we suppose these opercula, in consequence of interference in developement, to approximate only partially and imperfectly, or to unite and form a cicatrix, insufficiently supplied with blood-vessels, the natural consequence must be an improperly formed enamel, and one susceptible of falling an easy prey to the chemical influence of the decomposing fluids lying in contact with it, and imbibed into its texture.

Such, in my opinion, is the real cause of decay so constantly happening in the situation referred to—a morbid process, which, it will be observed, differs from the ordinary course of disease, by commencing in the enamel, and thence extending to the ivory, and not, as is

usually the case, affecting first the ivory, and secondarily involving the enamel.

In my communicated article to the journal last month, it will be seen that my theory of caries is still deducible to *one* cause or origin, the truth of which is daily being rendered more conclusive by practice and investigation. Since the publication of my first paper on the subject, I have had ample opportunity of either verifying or confuting the theory, from the following circumstance :—A lady of my acquaintance, in order to employ her time, and add something to a limited income, adopted the profession of preparer of microscopic objects, and with a view to assist her in so laudable an object, I have during that time made sections of hundreds of human and other teeth, but have never seen a symptom of caries into which I could not discover an external opening; consequently, I have not had cause to change my opinion, but still adhere to the supposition that the proximate cause of dental caries is *external* in all cases, caused by the chemical agency of oral fluids: I also deny the destructive influence of alimentary matter, but rather look upon that substance as a corrective or qualifying agent, than a cause of destruction to the teeth.

There cannot be a doubt, that a tooth, with imperfectly formed enamel, or when the enamel does not cover the tooth-bone at the bottom of any interstice, either upon the grinding surface, or upon any other part, that such portion of the tooth must sooner fall a prey to the chemical influence of abnormal salivary admixture, but we find the same action independently of a paucity of enamel deposit, for caries often takes place betwixt the teeth, and in any position where corrosive moisture can securely lodge. I had a case to-day of a true caries cavity in a lower bicuspidatus, caused by deposit within a broad clasp of an artificial tooth, which had been allowed to remain for a length of time unmoved, consequently, *uncleansed*.

[*Note.*—In Mr. Mackenzie's paper on the destructive influence of the mucous fluids on the teeth (published in the April number of the Quarterly Journal of Dental Science), the word "clasps" was misprinted for "caps" in the passage wherein Mr. Mackenzie wrote that "caps" were a certain destruction to any tooth to which they were applied.]

CANCER OF THE LIP IN A WOMAN.—A case of large cancerous ulcer on the lower lip of a woman was operated on by Mr. Hutchinson, at the Metropolitan Free Hospital. The patient was eighty-one

years old, but tolerably vigorous. She had for years been accustomed to smoke, and had held her pipe on the side which had now become affected. There was no hereditary history of malignant diseases. It had existed for about six months, and had involved half the lip. It had been very painful. The V-shaped incision was practised, and the wound healed well. Mr. Hutchinson adverted to the great rarity of cancer of the lip in women, and stated his belief that it was due almost solely to the comparatively small extent to which smoking prevailed amongst them. Still it was by no means infrequent to meet with cancer of the lip in men who had not smoked. In this instance, as in one or two others which he had examined, the structure under the microscope shewed a much less abundance both of epithelial and of the compound cells, than are usually met with in similar ulcers from the lips of men. Indeed, in some parts the ulcer seemed rather of the rodent character than of the true epithelial; yet before excision nothing could have been better characterized than the condition of the sore, and indeed, with the microscope, some, though but few, of the elements of undoubted cancer were seen.

ON THE USE OF ARSENIC AS AN APPLICATION TO CARIOUS TEETH.

By C. Barrow.

In the discussion ensuing upon the reading of Mr. Underwood's paper on the treatment of the dental pulp, and in the paper itself, I think the advantages of arsenious acid, as an application to diseased teeth, are not recognised. In it the dentist has a *certain* remover of sensibility from an obnoxious member, and in the very great majority of instances, a diseased member and source of suffering is preserved, and rendered valuable. The several arguments advanced against the use of this agent may be refuted, for the difficulties attendant upon the exhibition of any treatment, where that treatment is indicated, does not prevent it from being adopted. There is one property possessed by arsenious acid which I have never seen commented upon; viz., the power which I believe it possesses to *arrest decay* and *putrefaction* in tissues. This, if correct, stamps it at once as the most valuable agent in the materia medica of the dentist.

My attention was first directed to this subject, from being aware that arsenious acid is employed by persons who stuff animals, who rub it into the skins to render that texture not liable to decomposition.

The skins of animals, when exposed to the elements of decay without the counteracting vitality of a vascular system, are more susceptible to putrifying processes than dentine, or bone, which will longer resist such when removed from the body than any other part. May we not therefore, reasonably conclude, that the arsenic absorbed in the tissues of dentine, when used for the removal of sensibility, actually so far as it is absorbed, is a preservative against subsequent gangrene or morbid action. The experiments of Orfila, and others, have demonstrated the presence of arsenic in the bony tissues; and will not its presence there indicate its purpose? It is said the tooth becomes a dead body in the gum, and that the effort of nature to reject it, causes undue inflammation in the contiguous parts; cannot these, and other consequences, be guarded against or treated? I think so. Will not the periosteum of the fangs convey nutrition in many cases to the tooth so treated? The profession may depend upon arsenic when properly used, whereas many corrosive agents are destructive to dentine, or, when not so, leave the teeth liable to subsequent disease and pain. The points to be attended to in the exhibition of arsenic, a far as my experience goes, are:—Be careful the arsenic does not touch the tongue, gum, &c.—Where there is much inflammatory action subsequent, subdue by leeches, aperients, salines.—Be careful, prior to filling, that *all* sensibility is removed.

The method of application I adopt is this:—Saturate a dossel of lint sufficient to fill the cavity, after previously cleansing carefully the decayed part in mastic varnish, then gather a sufficient quantity of the preparation, consisting of equal parts of morphia and arsenious acid on the part of the lint into contact with the membrane, then carefully insert it in the tooth. The mastic cement sets so as to prevent the arsenic being absorbed in the mouth: in a day or so remove, and direct an application of tincture of myrrh to be used until the tooth is ready for filling, which be not hasty in doing—I generally fill in a week subsequent.

Deformity from Cancrum Oris.—In the chapter devoted to the consideration of cancrum oris, in Dr. Churchill's work on Diseases of Children, wherein this affection is most fully treated, he observes, "As may be supposed, the great majority of cases terminate fatally, but some few cases do recover, mainly those in whom the disease is primary, the constitution good, and which remain free from complications." The truth of this we find confirmed by experience, but more especially in meeting with cases of deformity later in life, which have

been the result of sloughing from this terrible affection in childhood, with the barest escape from a fatal result. In most of the cases, also, which come under our notice in the hospitals, the disease has supervened upon an attack of either scarlet fever or typhus fever, most generally the former. We remember well two cases of the kind, in two girls, which were treated by plastic operation, by Mr. Fergusson, of King's College Hospital, two years ago. We saw another case, at Guy's, on the 15th September, of a young woman aged nineteen, whose right cheek had sloughed away near the angle of the mouth when three years old, completely destroying the latter, and exposing the teeth and gums, the deformity being increased by the presence of a supernumerary canine tooth projecting obliquely outwards. This was the result of cancrum oris after an attack of fever. The late lamented Dr. Marshall Hall, thought at one time that this affection was more common in female children than in males; most certainly we see more females suffering from the *effects* of it than males, although statistics do not bear out that one sex is more affected by it than the other. Mr. Cock treated this deformity by paring the edges of the cicatrized tissues, detaching the old adhesions, and bringing the parts together by stitches; but this was not accomplished till a long incision was made over the margin of the lower jaw towards the chin, which permitted of approximation. The projecting tooth was extracted. The patient was fully under chloroform at the first part of the operation, and bore it tolerably well.—*Lancet.*

Cancerous Ulcer of the Cheek.—A healthy looking farmer, Samuel P——, aged thirty-four years, came to the Cancer Hospital, from Nottingham, on the 25th August, with a foul ulcer situated at the inside of the left cheek, somewhat backwards. It was the size of a penny-piece, and on careful examination was found to be cancerous; but it had been only in an ulcerated condition some weeks, commencing in the form of a tubercle. There was nothing to lead one to suppose on looking at this man that anything was the matter with him, nor could there be traced the slightest hereditary taint whatsoever. There was a decayed molar tooth near the ulcer, but it had nothing to do with its appearance. A case of this kind was looked upon as of so much importance by the surgeons of the hospital, that the patient was taken in to have the progress of this ulcer stayed, else it would in a short time perforate the cheek.

OBSERVATIONS ON THE EXTRACTION OF TEETH.

By Nemo.

As the Quarterly Journal of Dental Science devotes a portion of its pages to the reception of papers from individual members of the dental profession, upon subjects which they may desire to lay before their brethren, with a view of eliciting opinions in confirmation of their ideas, or the reverse; (in the latter case, friendly controversy, leading to the establishment of the great end sought to be established, namely—*truth*). I venture to offer a few remarks embodying my ideas on what is considered the orthodox practice, in reference to the extraction of permanent teeth.

The orthodox practice of the present day, I believe, is never to remove a tooth when there is a *chance* of saving it. Now, far be it from me to say, that this practice is to be censured *in toto*, but I must be allowed to give it as my opinion—an opinion founded on careful observation, that it is carried to excess. Who of the many and intelligent practitioners, reading the "Quarterly Journal," have not *constantly* coming under notice, cases of suffering, prolonged by stopping, which might have been cured *instanter*, by the despised operation of extraction? Ah! but, it will be objected, you should give a tooth every chance before you proceed to so violent a remedy; even if a patient comes with the avowed determination to have a tooth out, if there be the slightest probability of saving it, *advise*, and if that be not sufficient, endeavour to *persuade*—"delay," in order to try what can be done with anodynes, escharotics, and all that sort of thing; if your patient is obstinate, you may even go so far as to *refuse* the relief which nature teaches him to seek in extraction. This is all very well in a large number of instances, but the thing is carried too far. We often find that the theory of non-extraction is applied to little more than nasty rotten roots, which contaminate the breath, poison the saliva, and injure the health; and what is all this for? Simply, because it is said, that the removal would allow the jaw to shrink in, and shrivel the face! I feel that I am on delicate ground, in attacking an established custom, not only in England, but in America. And this in an ordinary man appears almost presumptuous; yet, nevertheless, if by any means, this paper may lead to a system of practice involving less pain, I shall not regret the effort it

has caused me, to venture to send it for insertion in a journal devoted to dental science.

I have alluded to the frequent suffering witnessed by dentists, (referring, of course, to those in moderately extensive practice,) prolonged, and sometimes even *produced*, by stopping teeth, and given it as my opinion, that in all desperate cases, extraction should be had recourse to; but there are also many cases, which, although *really* desperate, are *apparently* full of hope. The teeth are stopped, but do not answer. Now, does not this shew, that with all our knowledge, and with all the resources of this vaunted century, *we are very defective in the art of* DENTAL DIAGNOSIS ? I think it does; and therefore am anxious that the subject should be taken into serious consideration. It is a common thing enough to call attention to defective practice, and to leave it to others to discover the remedy; but as it is nevertheless often found that real benefit results from such a proceeding, the fear of being called to account for stating a disagreeable truth, is counterbalanced by the hope that it may be the means of stirring up those of my brethren possessed of greater intellect and more extended experience than my own.

No doubt there are not wanting practitioners, whose talents and acquirements may have been the means of placing them in a position of luxurious independence, ready to exclaim that they are not surprised to hear admissions of ignorance in respect of this matter from such and such quarters, that the best way to acquire knowledge of the art of dental diagnosis is to do this, that, and the other, as they themselves have done. Unfortunately for those who reason thus, there is still *the fact*, the hard fact, that teeth stopped by the most eminent dentists do ache afterwards, in a large number of instances. Indeed, the proportion of such cases in the hands of great men is far larger than in those of their more humble brethren, and the reason is obvious: the latter cannot afford to be experimenting with the mass of diseased bone, and inflamed pulp, by courtesy called a tooth, for months (their patients seldom being of a class to pay more than half-a-guinea for having a tooth stopped)—with the former the remuneration is such as to allow them to do as they like, wherefore, we now and then hear of their patients having had a year's preparation for stopping, after which a plug has been introduced with consummate skill (sometimes, it is said, equal to that of which we read in a pamphlet by Dr. Dwinelle, of the

United States—and see the results in wood-cut illustrations of its pages), but, alas! instead of comfort follows suffering, and the tooth has to come out at last.

I trust that a better state of things is looming in the future, and that from the many able men in the profession who (although in prosperous practice) are not content to allow so defective a system to remain unassailed, will lend their aid towards the development of correct diagnosis. In the mean time, I shall pursue my course of taking out all teeth very much diseased; and those who differ from me, will, doubtless, pursue an opposite course. It is possible that *some few* of the teeth I remove *might* have lasted a time by stopping. It is an established truth, that if those who differ from me continue to adhere strictly to orthodox practice, there will be a small proportion of teeth retained by the stopping, which would have been lost by my plan; but taking one case with another, I firmly believe that *the amount and duration of pain and of anxiety in the aggregate*, will be lessened to an extraordinary extent by the abandonment of a practice which has proved to be so defective.

CORRESPONDENCE.

ON THE DIFFERENT CLASSES OF TEETH SUBJECT TO CARIES.

To the Editor of the Quarterly Journal of Dental Science.

SIR,—May I, as a dental student, request the insertion of the following results of observations in reference to the different classes of teeth most subject to caries. The results are obtained from six hundred cases, which have come under my own charge, as the operating pupil of Mr. Robinson, the dentist to the Royal Free Hospital.

I remain, SIR,

Your obedient servant,

40, Gower Street, Bedford Square. HASLER HARRIS.

Cases :—

Females—448.	Teeth.	Males—152.	Teeth.
Upper molars . .	148	Upper molars . .	40
Lower ditto . . .	192	Lower ditto . . .	65
Upper bicuspids .	64	Upper bicuspids . .	26
Lower ditto . . .	27	Lower ditto . . .	11
Upper canines . .	4	Upper canines . .	3
Lower ditto . . .	2	Lower ditto . . .	2
Upper incisors . .	10	Upper incisors . .	4
Lower ditto . . .	1	Lower ditto . . .	1
Total . .	448	Total . .	152

From the above it will be seen that caries in all classes of teeth preponderate in the ratio of about three to one in females to that of males.

[We are glad to find that our students are pursuing their profession in a right direction, and it will always afford us much pleasure in giving insertion to papers like the above.—*Ed.*]

To the Editor of the Quarterly Journal of Dental Science.

Sir,—I am what you have pleased to term one of the *outsiders* in our profession, and have carefully watched the proceedings of both societies, the Odontological and the College of Dentists. From the first I have never been a member of either, and my position as a country practitioner would, I think, fairly entitle me to become so, had I applied to either of the societies for admission. I have, moreover, subscribed to both dental publications, and have usually perused the medical journals of the day; therefore, as you have pleased to term me an *outsider*, you cannot object to my offering a few observations relative to the present state of both societies. There is no doubt that there has been a most offensive and deliberate insult offered by anonymous contributors to your dental journals, to some of the heads of the profession; gentlemen who could have had no other object than to raise the *status* of their younger professional brethren, in coming *boldly forward* against others, for they themselves were beyond the caprice of public patronage, and required no publicity to be given to their names, to raise them in public estimation.

In your last number you clearly and definitely point out to the whole profession their future mode of action. You have wisely and liberally discussed the present *status* of both societies, and call upon the whole of the profession to step forward and amalgamate into one body. By this act you have clearly shown the *outsiders* that your publication is devoted to the cause it has so ably advocated from the first, and which will unquestionably bring a large number of adherents to the College, practitioners who have held, like myself, aloof from the unseemly and discourteous bickerings of anonymous correspondents, but who are nevertheless desirous of placing our profession upon a proper *status* with the colateral branches of surgical science.

I am not personally acquainted with either of the gentlemen who now fill the office of President to these societies, but I feel assured neither would use his influence to prevent an amalgamation of both bodies; and would be but too happy to lend their personal influence to forward such a desirable end, as they, with many others, can have no other object in view but the welfare of their profession, in public estimation, which in my opinion can only be obtained by a kind and liberal concession on both sides.

From this conviction, and the kindly manner you have treated the subject in the last number of your ably-conducted Journal, I shall now become a Member of the College of Dentists, and enclose you my name and address. I remain, Sir,

Your obedient servant,

AN OUTSIDER.

[We think our correspondent could not have read this Journal carefully, otherwise he must have discovered that we have avoided any approach to offensive language. As regards an amalgamation of the two societies, the matter rests with the profession. If such an amalgamation should take place, a fresh election of a President would be a matter of course. There could be no difficulty in selecting from such practitioners as Mr. A. Rogers, Mr. Tibbs, Mr. Harrison, and Mr. A. Clarke, &c. &c.—*Ed.*]

THE EARLY AND LATE DEVELOPMENT OF THE DENTES SAPIENTIÆ.

To the Editor of the Quarterly Journal of Dental Science.

SIR,—A few weeks since a young lady, between fourteen and fifteen years of age, consulted me, in consequence of her suffering from frequent pains in the lower jaw on the left side, extending to the ear

and side of the face. The pain was most severe when she was in bed. She had, some few month's since, suffered in like manner on the right side of the lower jaw; but the pain ultimately disappeared, and the left became similarly affected. Upon examining the right side of the lower jaw, I found the dens sapientiæ nearly developed, and the denture in every respect healthy and well arranged; on the left side, the second denture was also developed, with the exception of the corresponding dens sapientiæ. The gum above the space was much inflamed, and excessively tender to the touch; the well-known hard and unyielding character of the induration could not be mistaken, and upon the application of the lancet, there was no doubt as to the exciting cause of the patient's suffering; for the point of the instrument came in contact with the crown of the tooth—a free scarification of the gum on two occasions was sufficient to give her permanent relief.

I must mention, that I took an impression of the right side of the jaw in which the dens sapientiæ had been developed.

The following case shows the late development of the dentes sapientiæ.

Some few months since, I was requested by my friend, Mr. Wootton, to pay a visit to an old patient of mine, a general in the Indian army, *ninety-four* years of age, who, he stated, had a few months previously cut two superior dens sapientiæ, of which the old warrior was very proud. The general expressed a wish that I should see him, as, from various local irritation and "twitchings" in the gums, he thought a third set would soon make their appearance. Upon examining the upper jaw, I found it free from teeth, with the exception of the two superior dentes sapientiæ, which had been cut without pain and were perfectly developed, and to all appearance healthy; but upon the closest examination, I failed to detect the appearance of a third set of molars, bicuspids, &c.

He still retains the four incisors and cuspidates in the lower jaw, but there is no appearance of the eruption of the dentes sapientiæ.

He, however, insists that I had extracted the whole of his upper teeth some years ago, which were now being replaced by a third set; as I could not controvert his opinion, I contented myself by taking an impression of the upper jaw, which satisfactorily demonstrates that these teeth are developed at almost any period of life, from *fourteen years* of age, up to *ninety-four*. I remain, SIR, your obedient servant,

J. ROBINSON.

PRESUMED OSSEOUS GROWTH IN THE INFERIOR MAXILLA.

To the Editor of the Quarterly Journal of Dental Science.

SIR,—Now that the profession is fortunate enough to have the pages of your excellent journal as a medium for the communication of such matter as may be of use and interest generally, I consider it both a duty and a privilege which devolves upon us all, to take advantage of the opportunity. Believing this, I beg to contribute my mite to the general stock of information, and send you the following account of a case that occurred in my practice.

J. E. V——, a young man, ætat 19, in company with an elder brother, consulted me, December 30th 1856. He had suffered from an acute pain arising from the first molar tooth on the right side of the lower jaw. This tooth was carious on the lingual side of the crown, as was also the second molar on the same side of the jaw. Both teeth were abnormally situate (the first molar strongly inclining backwards and inwards to the mouth), and apparently firmly articulated in their respective alveoli. The peculiarity of the case consisted in the presence of a well-defined and unmoveable osseous growth, extending from over the anterior root of the first molar to the posterior root of the second molar longitudinally, and occupying the entire space from the neck of the gum against the teeth, to the lowest extremity of the gum downwards. In shape and size, it closely resembled the half of an ordinary walnut, and consequently protruded the cheek to a considerable extent. The patient had been previously seen by two or three members of the medical profession, and also by a member of my own profession; and the decision arrived at was, that the case was one of "osteo sarcoma," and would require an operation, viz., the removal of a portion of the alveolus, involving a portion of the jaw; at the same time, it was suggested that the first molar should be extracted, *if it could be done with safety.* Although my patient was an assistant to a surgeon, he had not become sufficiently accustomed to the knife to think of its use upon himself without a great degree of terror; and the investigation of the case before consulting me having spread over a considerable time, the idea of an operation had not failed to produce very marked effects. His face was pale, the pulse hardly distinguishable; and on being seated in my chair, large drops of perspiration stood upon his forehead. He begged hard to be allowed the use of chloroform, if I intended to

extract this tooth, but this I refused. Having made a careful examination of the case, I determined to remove *both* molars, although the density of the tumour preponderated in the direction of the first. After some hesitation, my patient allowed me to proceed, and I accomplished their extraction without the slightest disturbance of the alveolar process in either instance. The hemorrhage having ceased, I manipulated the tumour, and pressed hard upon it in order to detect the slightest discharge of pus, or any loose alveolus; but none whatever appeared. The patient complained of no pain throughout this portion of the operation, and stated, that from his first noticing a small swelling upon the gum, he had suffered no more than inconvenience in that part, arising from its gradually augmenting size. The periosteum of each tooth was considerably thickened, the result of active and chronic inflammation, and a small portion of the apex of the posterior fang of the first molar was denuded of its covering; beyond this, there was nothing remarkable.

I stated my firm conviction, that the tumour would be absorbed by unaided natural action, now that the teeth (the entire cause) had been removed; but in order to expedite its reduction, I advised the application of slight mechanical pressure, by means of a small band and a pad placed over the part, together with constitutional treatment of tonics and liberal diet. The former, however, was not put in practice, owing to the inconvenience of keeping it in position.

I determined to ascertain the result of my decision before resorting to the usual means adopted in such cases. By January 12, 1857 (thirteen days), the tumour had slightly but *perceptibly diminished*, and it continued to do so regularly and gradually until the following 1st of March, when it had entirely disappeared. I saw my patient on the 4th of March, and was gratified to find the surface of the gum perfectly natural in appearance; a slight absorption had followed, as is usual after extraction, and the gums and alveolar borders had assumed the knife-edged shape, and it was evident the case was satisfactorily complete.

Now, Sir, the inference I draw from this is, that had my patient submitted to the suggested surgical operation upon his mouth, the result would not have been so satisfactory, inasmuch as the irritating cause would not have been touched; beyond which, two carious teeth would have remained to trouble him, apart from their presence tending to incite a second development of the unsightly lump; whereas, every dentist knows the relative value of teeth so situated, their pre-

disposition to decay being statistically proved; I therefore felt no hesitation in removing them, in order to spare him an operation from which he shrank with a very reasonable and proper dread. I was induced to send this for insertion, if you thought it worthy, in order to stimulate any other fellow practitioner, similarly situated, to resist a too hasty resort to operative surgery.

I am, Sir,

Yours, &c.

Alfred Hill.

P.S. I forgot to mention that the tumour had taken nine months to develop itself.

EXTRACTS FROM DENTAL PERIODICALS.

AMORPHOUS SULPHUR AS A CEMENT FOR CARIOUS TEETH.

Translated by Mr. W. Bennett, Associate, from "*L'Art Dentaire.*"

It has been long known that sulphur possesses a very curious property when exposed to the action of heat. At a temperature of 232° Farenheit, a canary-coloured liquid is obtained; if the heat be increased to 400° it becomes darker, and loses its fluidity to such an extent, that the vessel in which it has been melted may be inverted without its falling out. Should the heat be again increased, the mass becomes fluid once more, still retaining its dark colour.

It is in this state that the sulphur is to be thrown into cold water, when a brown, soft, and elastic substance will be obtained, which is soft, or amorphous sulphur.

It is necessary that the temperature should be fully 400° at the time the sulphur is thrown into water, for if it be done at its first state of fluidity, namely, 232°, nothing but granules of the ordinary yellow chrystalline sulphur will be obtained.

It is this amorphous sulphur, somewhat resembling coautchouc, that is employed in stopping teeth; for which purpose it must be kept in water until required for use. After the tooth has been prepared in the usual manner, a globule of the required size is dried on bibulous paper, and inserted in the cavity; the proper form is to be given, the

excess of material removed, and the operation will have been finished without causing the least pain.

At this stage the sulphur is of a deep brown colour, but in a short time it will harden and become somewhat of a yellowish grey, a tint that matches pretty well with carious teeth. The sulphur, thus placed, acquires a considerable amount of hardness, and being incorporated as it were with the tooth, becomes almost as hard as the tooth itself. It will bear a blow, and may be scratched with the nail without injury, even when placed in cavities so shallow that the ordinary cements will not hold in. Besides its hardness, it possesses the valuable property of insolubility without the aid of heat in every known substance, (the bi-sulphurate of carbon excepted), and it is not acted on by any substances taken as food; it is also a bad conductor of heat. Thus, sulphur by itself being innocuous, and being unable to form injurious compounds with other substances which pass into the stomach, there will be no danger in employing it in any quantity needed.

Soft sulphur has the merit of being easy of preparation. A glass tube closed at one end, and a spirit lamp, are all the apparatus needed: into the tube is placed a few small pieces of roll, or what is better, flowers of sulphur; this is to be warmed over the lamp, and when at the proper temperature, must be thrown into water. In five minutes this cement may be prepared and placed in the tooth, and by excluding the action of the air and moisture, relieve the patient from toothach. Should the pain be very great, and the preservation of the tooth from the action of these agents be found to be insufficient to give relief, a little creosote, muriate of morphia, or such substance applied previous to the introduction of the sulphur, will most likely give relief; by this means, it will be at all times possible to give ease, and sometimes to make a perfect cure.

THE HISTOLOGICAL FORMATION OF HARD TISSUES.

From recent experiments by Mr. Rainey, "we gather," that by a proper employment of chemical and mechanical means, calcareous bodies can be produced artificially, identical in their mode of formation with a multitude of natural products of a like composition, as the skeletons of animals, and other hard structures formed in connection with living tissues, and so similar in their physical and optical cha-

racters, as not to admit of being distinguished from them even by the microscope.

The paper is one of high interest to the members of our profession, and especially so to those who have devoted themselves to the histological investigation of dental structures; and herein will be found a nearer approach to the true formative process than any we yet remember to have seen put forth. Mr. Rainey observes—In shell structure, the earthy matter is considered by those who have written upon the subject, to be contained in the interior of cells, an idea which presupposes the existence of cells prior to that of the carbonate of lime, which in no way agrees with the appearances presented by the microscope. The order in which the parts appear are, first, a membrane, generally without any marking whatever upon it (which can be taken for cells); secondly, very minute particles of carbonate lime, combined with albumen, so as to leave a residue after being acted upon by muriatic acid; thirdly, the coalescence of these particles into larger globular portions, acted upon in the same way by acid as the smaller particles, so that if this albuminous residue is to be regarded as the membranous cell from which the earthy matter has been dissolved, the very smallest particles which are first deposited are as much cells as the larger globular portions: but it has been shown that precisely the same results can be produced artificially*, therefore, this residue cannot be regarded either as a true cell, or as an infallible test of an organic formation; and, lastly, the transformation of these globular portions into laminæ, or plates, according to the mechanical conditions under which they are placed. If pure phospate of lime be formed and deposited under the

* The chemical and mechanical means necessary to form artificial bodies, are best fulfilled by dissolving a pound of gum arabic in a small quantity of water as possible, and after straining off the solution, mix with it two ounces of carbonate of potash; then set it aside for a few days, in order that the carbonate of lime therein formed may subside; afterwards filter the supernatant alkaline solution of gum through cloth, and evaporate it by a gentle heat to the consistency of treacle. Put a given quantity of the above inspissated solution with some more carbonate of potash dissolved in it, one ounce for instance, into a two-ounce wide-mouthed bottle, and introduce into it two microscopic slides, so placed, that their upper edges are resting one against the other; then pour gradually a sufficient quantity of a weaker solution of gum arabic, perfectly clear, to entirely fill up the bottle; then set it aside to crystalize, which it will do in about four weeks.

same conditions as those mentioned in the process for obtaining the globular carbonate of lime, it does not lose its crystalline character, although its crystals congregate in globular masses; but if a small quantity of carbonate of lime be found at the same time as the phosphate, these blend together, and produce a compound resembling in its form and mechanical properties the globular carbonate of lime. The white of egg contains sufficient alkaline carbonate for that purpose; so that, if phosphate of soda and muriate of lime, dissolved in separate portions of white of egg, be brought in contact, and allowed to mix very gradually, a mixture of phosphate and carbonate of lime will result, of a globular form.

From this experiment it would appear, that the carbonate of lime, found always in combination with the phosphate (as in bone, dentine, &c.), serves to prevent the crystallization of the phosphate, and to cause its particles to coalesce, and to blend with other structures, and thus to bring the earthy component of bone under the same conditions necessary for the coalescence of its particles, as have been shown to exist in respect to shells. To ascertain how far this reference agrees with microscopic appearances, I examined a very low form of bone, one intermediate in some respects between true bone and shell, namely, that to which the muscle moving the claw of the crab is attached. In the very young crab, this bone can be seen to be formed by the coalescence of particles of carbonate of lime, exactly like those of the shell. The next bone examined, as particularly favourable for this purpose, was that of a young frog, about an inch long. In this reptile, the particles of earthy matter are much larger, and more distinct, than in birds or mammals. Here, in the cartilage, is seen, that the deposit is not formed in its cells, but on the intercellular substances, notwithstanding it does not so follow this substance that the circular areas enclosed by the osseous rings correspond in the least, either in number, form, or arrangement with the cells of the cartilage on which nodulated portions of earthy matter are formed. The nodulated portions still further coalescing, form osseous rings, which, with others of a similar form, and with the cartilaginous matrix, make up the substance of the bone. The circular spaces get smaller as the ossification advances, and they appear ultimately to become the so called bone-cells or lacunæ. These parts, as thus early examined, present no canaliculi, which probably are only spaces between imperfectly coalesced portions of earthy matter, widened and made more apparent in the dried bone by the process of dissec-

tion, and the presence of atmospheric air. The above is only one form of commencing ossification. That which is called membranous ossification appears in principle to be the same. The canals of Havers, large at first, became gradually contracted in their calibre by alternate layers of membrane, corresponding to cartilage in the other process, and bone more or less intimately blended together. Hence the appearance of the two structures described by Tomes and De Morgan, as seen in their transverse sections. Probably the globular dentine described by anatomists is merely the form which the dentine assumes after the coalescence of its primitive particles, corresponding in this respect with the modulated rings in the recently-formed bone of the frog; and the dentine canals will perhaps prove to be merely longitudinal spaces, existing in dried sections of teeth, between portions of perfectly-formed dentrine, arranged with different degrees of obliquity around the central pulp cavity. Passages of precisely the same character exist between the analogous portions of enamel, and which are also considered by some as distinct tubes. It is possible that the coalescence does in some instances proceed so far as to produce a circular space entirely surrounded by dentine; but this is probably only an exceptional circumstance, as it does not comport with the function of tubes generally, that a system of such organs, intended to convey nutritious matter, should either proceed from, or terminate in a mere cellular interval, like the *cavitas pulpæ dentis*, destined to convey blood-vessels, nerves, and their connecting areolar tissue. As respects the medium by which the earthy components are brought in a fluid state to the cartilage, or membrane, where the ossification is going on, there to undergo such decomposition as shall result in the formation of the coalescing compound of lime; as the route for the conveyance of the salts of lime may be inferred to be the blood-vessels, so the medium is the fluid contained within them.—*Medico-Chirurgical Review for October.*

WHAT ARE THE BEST MEANS FOR SECURING A HEALTHY DENTINE?

It is reported in the *Dental News Letter*, that Professor Harris made the following remarks before the Dental Convention upon this most interesting subject.

He could very well conceive that bread, having in its composition saleratus and cream of tartar, if it affected the general health, might

indirectly affect the teeth prejudicially; but that they had any direct action upon them, he could not for a moment conceive; for the reason that the alkaline properties of the saleratus were neutralized by the cream of tartar. That caries of the teeth is the result of the direct action of alkalies, is refuted by the fact that the animal frame-work remains, and even with exalted sensibility, long after the destruction of the earthy salts of the affected parts. But so far as particular kinds of diet and modes of living were capable of affecting the general health, so far the liability of the teeth to decay might be increased. He was of opinion that if every individual came up to a perfect standard of health, caries of the teeth would very rarely, if ever, occur, for the reason that they would be capable of resisting the action of those chemical agents, to the presence of which caries of the teeth was now universally admitted to be attributable, more especially if the ordinary means of cleanliness were resorted to. He agreed with his friend, Dr. Kendrick, that cleanliness was the all-important thing for the preservation of the teeth; but some teeth were so susceptible to the action of chemical agents, so imperfect in their physical condition, that they were very easily assailed. For instance, in teeth that were of a very soft texture, they found deep indentations in the grinding surfaces, sometimes absolute imperfections of the enamel, through which the chemical agents of the mouth, whether existing in the fluids of this cavity, or the result of some change which takes place in the remains of alimentary substances lodged in these indentations or between the teeth, are introduced. Teeth of this description decay easily and rapidly. Again, they oftentimes meet with instances of caries, or erosion, if they pleased to call it such, immediately after the eruption of the teeth from the gums, showing that it was to the action of the fluid contained in the sacks of the teeth, and that, too, after they had become completely enamelled, that decomposition was attributable. An example of this kind occurred to him now, which ran through a whole family in Baltimore, and seemed to be dependent upon some peculiar constitutional idiosyncracy. In almost every member of that family, the teeth, the molars particularly, were found to be more or less eroded immediately on their eruption from the gums, and before they were brought in contact with any agents from without. The fluids of these sacks were undoubtedly acidulated, and this acidulation depended upon some peculiar cachectic habit of body of the various members of the family to which he referred. He could call up a hundred examples of this kind, but one would suffice.

Again; they found a somewhat analogous process occurring in the destruction of the roots of the temporary teeth. This had usually been attributed to the action of the absorbents, but experiments had shown that the extraneous substance which is brought in contact with them, before the destructive process commences, exhales an acidulated fluid, which has a stronger affinity for the lime of the teeth than the phosphoric with which it is combined; and it was usually regarded as unphilosophical to attribute to two causes an effect when one alone was sufficient for its explanation; and in this instance he supposed that the acid exhaled or thrown out from this extraneous body, coming in contact with the roots of the temporary teeth, as the chief agent in breaking down the calcareous material; then the absorbents might come forward, take up the residuum, and carry it back into the general circulating system. He could not conceive that the vessels so minute and delicate as the absorbents, were capable of rasping down a substance as hard and resisting as the roots of the teeth.

Dr. Clark, of New York, requested Professor Harris to touch upon the fact, that in many mouths, the caries commences at the exact edge of the gum. It seemed to him that the cause might be found in the secretions of that particular part of the mouth.

Professor Harris said that was undoubtedly the explanation. The suggestion just made went most strongly to establish the correctness of the views he had advanced; for where the mucous secretions of the mouth were first brought in contact with the teeth, and especially where they were longest retained, was the spot where they most frequently discovered the first evidence of their destructive ravages. This is especially the case upon soft teeth—teeth easily acted upon by chemical agents. He was aware that a variety of theories had been propounded with regard to the cause of caries of the teeth, but in his opinion, it was the result of chemical decomposition of the earthy salts of the affected part, sometimes accompanied, but more frequently followed by the disorganization of the animal frame-work of the afflicted portion of the tooth.

The question was often asked—"Why are seafaring men, and persons residing near the sea-shore, more subject to caries of the teeth than persons residing in the interior of the country?" He had often remarked the fact, and he had often heard officers of the navy say, that since they had been almost constantly on the water, their teeth had decayed much more rapidly than before. He had been unable to offer any explanation, but two or three years ago, while at Cape May,

he observed, after he had been there two or three days, that the locks of his trunks were very singularly affected, having turned green. It seemed to him that this must be attributable to some atmospheric influence—to some acid, perhaps; but where did the acid come from? It is well known that the ocean contains salt—a muriate, or hydrochlorate of soda. Was it not possible that the evaporation going on continually on the surface of the ocean might set free, to some extent, hydrochloric acid, which, by diffusing itself abroad in the atmosphere, is brought in contact with the teeth at each inspiration; and might not this act prejudicially npon these organs?—and was it not to the presence of this acid that the change to which he had referred was attributable? This seemed to him a very plausible and rational explanation.

Dr. Dillingham, of Boston, said he had lived for some years in the vicinity of salt water, and he had frequently noticed the decayed condition of the teeth of seafaring men. On one occasion, while practising at Edgartown, a gentleman called on him to have his teeth examined before going on a whaling voyage. He had never seen a more perfect set of teeth than that man possessed. He requested him to call and see him on his return, and some three years afterwards he did so. Five of his teeth had entirely decayed, leaving nothing but the roots, and there were some six or seven that needed to be plugged. He had endeavoured to ascertain the cause of this, but had as yet arrived at no definite conclusion. He thought it might be referable to the use of salt provisions, and the vinegar and limes which were used so freely by seamen to prevent scurvy.

Dr. Baker said there was probably no man in the country who had received greater benefit from the writings of Professor Harris, or who entertained for him a more profonnd respect, than himself; but on the question of the influence of alkalies on the teeth, he could not agree with him. He thought the absence of cleanliness in the case of sailors was a great cause of the decay of the teeth. It had been said that in the preparation of bread, their acids and alkalies neutralized each other; that was true, but they destroyed the goodness of the wheat, and might, in this way, act upon the teeth.

Dr. Branch, of Illinois, said that he thought there were few who would maintain that alkalies, moderately applied to the teeth, would be productive of injury. He should look further than that for the cause—in the constitutional effect. If there was an excess of alkali, as there often was, in the bread we use, that being taken into the

stomach, excited that organ to throw off an extra quantity of acid. If they attempt to overpower nature in any direction, she would resist and perhaps overact in an opposite direction. Thus it was that by taking alkalies into the stomach, we excite the production of acid in the system, and the vessels are excited to an extent that becomes injurious, the acid thus produced acting prejudicially upon the teeth. Thus the alkali taken into the stomach affects the teeth, not directly, but indirectly. The great secret of a healthy denture was a healthy constitution. Give him a constitution able to appropriate, as a healthy constitution is able, all substances taken into the stomach to the building up of the system, and he would show them a healthy denture. It was sometimes asked what food was best calculated to produce a healthy denture, and that was very proper with respect to a diseased subject; but he maintained that it was little matter what food a person ate, so that it contained any proper nutriment for the body, if he had a healthy constitution, to assimilate the food to the building up of the system. Their attention, as dentists, in this matter, should be directed to those things which were calculated to give their patients, whether young or old, a healthy constitution. He should answer the question, "How shall we produce a healthy denture?" in one word—produce a healthy constitution.

Dr. Reed, of Newport, N. H., said he had been instructed and edified by the remarks of the speakers who had preceded him. It had been correctly stated, in his opinion, that a person having a healthy constitution would have a healthy denture; but their patients were thrown upon their hands with an unhealthy constitution, and he wished to know the best means at their command for securing a healthy denture to those persons, notwithstanding the unhealthy constitution with which they found them. They had young patients brought to them daily, even infants in their mother's arms, to know what should be done to secure for them good teeth. He believed that acid was the great enemy they had to combat, and therefore he had uniformly directed the use of a mild alkali, to neutralize not only the acids of the fluids of the mouth, but the acids which are produced by the fermentation of the foreign substances which may be lodged between the teeth, in cavities, and beneath the gum, especially upon the buccal muscles, where there was no action of the tongue to remove them. He recommended his patients to use a little nice soap, and cleanse the mouth thoroughly.

Dr. Clark, of New York, said this was a subject of extreme interest

to him, and he wished to say a few words, that might call forth remarks from others more capable of elucidating the subject than himself. He felt convinced that the cause of decay upon the surface of the teeth, on the line of the gum, and particularly on the outside of the gum, could not possibly be owing to any secretions there, for the reason that he had cases in his own family, where these places had been cleansed often, and it had been found almost impossible to prevent decay there; and this, too, when all the other teeth, even where they were crowded, and it was impossible to clean them, had manifested no signs of decay. He was of opinion that the cause of decay there was different from that which produced decay in the grinding surfaces of the molar teeth, and he hoped this discussion would be protracted, that they might have the views of other members of the profession on the subject. The case seemed to him analogous to the decay of many vegetable substances, to the decay of posts in the ground, and the decay of vessels, where there was an alternate exposure to atmospheric influences and to moisture. It seemed to him that there must be an acid generated at the edge of the gum, peculiar to the place, which, at the moment of its production, acts directly upon the teeth. There were many cases that came to the knowledge of every dentist, where they found that those surfaces were polished and polished, until they were polished through, but still the same action was manifest upon the enamel, and he believed it was almost exclusively confined to the enamel.

Dr. Allen, of New York, said, the great object of the Convention was to arrive at facts, and see if they could not do more good in their profession. This was what their patrons and the community demanded of them; and he believed they had at length struck at the root, the very starting point of improvement. As to the cause of decay, they had been told that if they had a healthy constitution, they would have sound and healthy teeth. He subscribed to that; but here was the question—"How should they secure that healthy constitution."

Dr. Branch, (interrupting,) said, that in the remarks he had made, he meant to be understood, that in order to produce a healthy constitution, or to make a diseased constitution healthy, they should study constantly to keep up the balance of the system, by exciting alternately the production of acid and alkali. It was no use to undertake to subdue acids in the system by putting alkalies into the mouth.

Dr. Allen said that was the point he was attempting to reach. It was their duty, as he conceived, to pay most especial attention to those causes which would produce the breaking down of a good con-

stitution. They had been told that it mattered little what they eat, provided they could maintain this balance; and the proviso was well thrown in. In the West, where there were a great many distilleries, cattle and hogs were fed on distillery "slops" to a great extent. If a cow, that had been raised on grass, was fed ten years on "slops," her teeth would become so affected that she could not maintain life by eating grass. If the animal economy was thus affected in the case of the cow by her food, why not look at their own systems, and see whether they were not affected in the same way—whether the same law does not govern us as the cow or the hog. He took the ground that caries of the teeth was the effect of chemical action, produced by the superabundance of acids or alkalies, the one affecting the limy portions, the other the gelatine portions of the teeth. The point was to discover what kinds of food will produce the most healthy condition of the system. He thought that if they were to live on a more simple diet, if they had less to do with acids and alkalies, they might look for better teeth. He thought there was a law in the animal economy that would teach them a good lesson.

Dr. Sylvester, of New York State, referred to a case cited by Dr. Baker in the article read by him, of several students, who had been very seriously affected by the bread they ate, which was mixed with saleratus. He said he knew something in relation to that matter, and that it was not the saleratus alone which had produced the effects spoken of. The boarding-house where the students lived was a cheap one, where the object was to procure the greatest amount of nutriment for the least amount of money. A great portion of their food consisted of gingerbread, sweetened with cheap molasses. It was the sweet and the saleratus, occasioning a disordered stomach, that produced the disease, not the saleratus alone.

He was glad to hear the question brought up with reference to the decay of the teeth of seamen, but he thought they must look for the solution of the cause in another direction from that mentioned by Professor Harris. He thought he could make this evident by one simple statement of fact. Some years since, having his attention turned to the effect of diet upon the teeth, he determined to make an examination into the condition of the teeth of the aborigines of our country, and accordingly visited the sea coast near the city of Darien, Ga., and spent a day in exhuming the remains which had been there thousands of years, for all he knew, and collected a bushel of teeth, among which he found only one case of disease, which resulted not from

caries, but from the wearing down of the tooth until it reached the pulp cavity. Those aborigines lived right on the sea coast; the mounds from which the teeth were taken were not more than half a mile from the sea; so that he thought, if it should prove a fact, that people living on or near the salt water, are more subject to caries of the teeth than people living inland, they must look for the cause in another direction than the influence of salt air upon them. It seemed to him that they might go back even further than the preceding speakers had gone in seeking to account for this fact. It was important for them to tell those who were becoming mothers, that even before birth, the teeth in embryo exist in the infant, and that causes which influence their formation at that time may have their effect years afterwards. How was it with our ladies? With compressed systems we have a compressed alveolar ridge. If they would effect a change in this matter, they must go back to the primary cause, and ask the women of the country to dress and live according to nature, and then, when their children died, their teeth would be like those of the aborigines of the country, and their profession useless. The manner of living affected the teeth gradually. He had noticed that persons coming to this country from England, with perfectly sound teeth, after living here a few years, found their teeth begin to decay. That it was not the climate, was proved by the fact that the aborigines had sound teeth; it was their mode of living—their hot food and saleratus.

Dr. Dwinelle said he thought he could answer the question now under consideration in one word—*cleanliness*—positive and absolute CLEANLINESS; studying the necessities of the constitution, and contributing to them in such a manner, that a healthy condition of the secretions of the system will be secured. It was well known that their constitutions were continually changing more or less, from one extreme to the other. They had only to study these changes, and consider that they were, in fact, chemical laboratories, containing every element within themselves that was embraced in the universe, and they had only to use their common sense, and study to regulate things correctly. It seemed to him that nothing was more true than that the decay of the teeth came purely from chemical action, and was owing to an excess of acid, or alkali in the system, the acid acting upon the lime, the alkali upon the gelatine. They had only to go into a chemical analysis of their teeth and bones, to ascertain where the trouble lay. He presumed there was not an individual present, who had not pre-

scribed alkalies, under some modification, to his female patients. He knew that the teeth of females, during one period of gestation, decay more rapidly than at any other period of their lives; they must correct this. He did not think that saleratus decayed teeth. They were continually taking substances into their mouths, which, if used exclusively, would destroy the teeth. Dr. Westcott had been over this entire field, and proved to a demonstration, just what effect each individual substance had upon the dentition. It seemed to him, that cleanliness, and a careful attention to the idiosyncracies of the individual constitution—because, what was applicable to one individual, was not applicable to another—were the great requisites for securing a healthy denture.

Before sitting down, Dr. D. said, he desired to refer to the remarks made by his friend, Dr. Sylvester. His intimation was, that the aborigines were not afflicted with decayed teeth. It was the general and popular opinion that we were a degenerate race. He begged leave to differ; we were a changing race, but he believed not a degenerate race. He believed we had as good specimens of men, physically, in these latter days, as ever were known in the days of Moses or Noah. His observation differed materially from that of Dr. Sylvester. He happened to be born—accidentally and without consultation (*laughter*)—in the upper part of New York State, where many Indians were buried. He had not dug up Indians by the hundred, nor gathered teeth by the bushel, but he had desecrated fifty graves, perhaps, and in his perambulations, he had found a great many decayed teeth. He did not know but his predecessors then might have used an excess of saleratus (*laughter*), but he only spoke of the fact. He had also in his possession the tooth of an Egyptian mummy, which was very badly decayed, and showed plainly that it troubled its owner, who might have been cotemporary with Noah or Moses himself, with the toothach. We had, too, he believed, an unquestionable specimen of Egyptian dentistry—the tooth of an Egyptian had been found filled. He did not believe, therefore, that we were a degenerate race. In fact, he was not prepared to say that the toothach was not among Job's afflictions.

HOSPITAL CASES.

COMPOUND FRACTURE OF THE SKULL.

The following case came under the hands of Mr. Cooper Forster, at Guy's Hospital. A lad, aged sixteen, was admitted soon after having received a violent blow from a piece of iron over the left side of the head. There was a compound and comminuted fracture of the parietal bone, with evident depression, yet, no symptoms whatever existed. The lad undressed himself, and got into bed without assistance. Immediate elevation of the depressed portions of bone was performed, and the bleeding from the middle meningeal, which had been free, ceased spontaneously afterwards. The dura mater was not much injured, and the brain was nowhere exposed. The lad expressed himself as relieved from the sense of weight he had felt before the operation. The accident had occurred on a Monday, and up to the next Friday all seemed to be doing well. On the latter day, however, he became drowsy, then delirious, then comatose. Death in coma took place on Saturday, and the autopsy showed acute suppurative arachnitis of the left hemisphere. A considerable quantity of pus had been effused, but the inflammation did not extend itself below the tentorium, or to the opposite side.

COMPOUND FRACTURE OF THE SKULL, WITH DEPRESSION.

Mr. Browning relates the following case in the *Medical Times*:—

A. J——, aged four years, while playing by the side of the river Don, fell a distance of ten feet into the bed of the river, alighting with his head on a piece of rock, the consequence of which was a compound fracture of the left parietal bone, beginning an inch and a half in front of the posterior superior angle, and running in a direction downwards and backwards to the extent of half an inch. When I first saw the little fellow, two hours after the accident, there were no symptoms of compression of the brain; but there was a wound of the scalp an inch long in the site mentioned, fracture of the bone beneath, with palpable and considerable depression, the sharp edge of

the sound bone being distinctly perceptible to the touch. His skin was hot, and pulse slightly accelerated in frequency. Ordered water dressing to the wound; to take four grains of chloride of mercury immediately, and half an ounce of febrifuge mixture every four hours.

On the next day (August 31st, 1856) there were no symptoms of compression; wound healthy; febrile excitement abated; and by the 9th of September the scalp wound was healed, and I found him running about again perfectly recovered, without having suffered from a single head symptom.

Remarks.—I consider there are two points worthy of notice in the above case. First, the total absence of every symptom of compression of the brain, with the presence of such evident depression of the bone. Secondly, the success attendant upon the treatment, which differed from that usually recommended, in dispensing with the use of the elevator until symptoms of compression shall call for it.

Two Cases of Cancer of the Lip.—One of these was in an old man aged seventy-three, who had been an inmate of the Cancer Hospital, with a large cauliflower growth, involving nearly the whole of the lower lip, of six year's duration. Four years ago it was removed by a surgeon in Berkshire, and reappeared two years after. The upper part of the lip is ulcerated, but healthy-looking, and the surrounding parts look red and inflamed. Latterly his health has been failing, but this appeared to us, when we saw him (July 7th), to be due more to old age than the disease. The powdered sulphate of iron was sprinkled over the ulcerated surface by Mr. Cooke, with good results so far. Dr. Knox pointed out to us in this man the remarkable development of the risorius Santorini, which, as our readers are aware, is the insertion of the platysma myoides muscle into the angles of the mouth.

A second case of cancer of the lip, at the same hospital, in a man aged fifty, had existed for four years. The ulceration was extensive, involving the whole of the lower half of the orbicularis oris muscle, and commenced in the form of a pimple. A lotion of the sulphate of copper was here being used. Dupuytren's caustic, which recently cured a case of cancer of the lip in this hospital, had been ineffectual in this man. It is composed of ninety-five grains of calomel and five of arsenic.—*Lancet.*

Recurrent Epithelioma of the Lip.—A short time back we witnessed the operation of removal from the lower lip of a cancerous growth, by Mr. De Méric, at the Royal Free Hospital, and which has evinced a disposition to recur. The particulars of the case, as furnished us by Mr. W. Curran, house-surgeon to the hospital, are, that the patient was a labourer, thirty-one years of age, a large, muscular, healthy man, of temperate habits, and free from any hereditary taint. When admitted, there was a hard, irregular swelling, of considerable size, on the outer margin of the lower lip, of four months growth, first noticed as a chapping, and then assuming the appearance of a blister, being regarded as due to the irritation of a pipe, to which, Mr. Curran's notes mention, the patient "clings with a tenacity worthy of a better cause." Two weeks before admission he had severe darting pain, particularly at night, with aching along the face and jaws. The disease was entirely removed by a V incision, the edges being brought together by needles. The wound healed up, but left a rugged cicatrix, at the bottom of which a fistulous tract remained, which admitted of the occasional escape of saliva. When we last saw this man, there was an indurated fissure, with return of pain, relieved by smoking, or friction. The surrounding skin was hard and nodulated, and adherent to the subjacent bone, which is itself likely to become involved in the disease. Notwithstanding all this, the man's general health is good.

Shortly before the operation in this case, we saw Mr. Cock, at Guy's, remove a large cancerous ulcerated tubercle from the under-lip of a man by the V incision; it had its origin in a pipe. The wound healed up perfectly.

This disease is most probably at first local, and free and early extirpation is the remedy. Sometimes the cure is perfect, at other times a relapse occurs in from six months to two years.—*Lancet.*

Cystic Disease of the Lower Jaw. A very striking and well-marked example of this affection has been in St. Bartholomew's Hospital, under the care of Mr. Coote. A hearty-looking man, seventy-four years of age, has a most extensive cystic enlargement of the lower jaw on the left side, which has been coming on for five years and extending into the floor of the mouth, in which situation the cysts are fluctuating. The origin of the affection in the present instance Mr. Coote attributes to the *irritation produced by the stumps of decayed teeth.* He punctured some of these cysts with a trocar, and gave exit

to a sero-purulent fluid from one, and fluid like the white of egg from two others. On the 5th of September he pulled out a couple of bodies of teeth, with scarcely any remains of fangs, but in their stead some irregular fibrous-like projections. The removal of these permitted the flow of a sero-albuminous fluid, the teeth having acted like stoppers. Since the man has been in hospital, the size of the tumour has most certainly diminished one-third under the plan of treatment of puncturing. The age of the patient precludes the possibility of attempting any more severe measures than those already adopted. On the 21st the swelling had somewhat increased, and three or four of the cysts were again punctured, with the discharge of a thick, clear, yellow fluid, and several of these were run into one internally. This was done under partial anæsthesia from chloroform. One of the cysts discharged a good deal in the mouth; this was partly swallowed, and had caused indigestion.

CHEMISTRY.

Anæsthetic Substances. Our readers may recollect that a few months ago amylene was recommended as preferable to ether and chloroform in producing stupefaction or anæsthesia, on the special ground that its employment was unattended with danger to the patient, or nearly so. MM. Foucher and Bonnet have, however, in a recent communication, addressed to the Academy of Sciences, recorded facts leading to quite a contrary result. In twelve experiments performed on rabbits they have ascertained that the anæsthetic effect of amylene is produced within from three to six minutes after its application. Before stupefaction is produced, the animal utters piercing cries, and throws its head backwards; its breathing is accelerated, the globe of the eye is strongly injected, and moves convulsively, a tracheal hoarseness always accompanying the above symptoms. The period of insensibility does not last long if the application of amylene be not continued; in the contrary case, however, a complete collapse takes place; the animal, stretched out without motion, obeys every impulse of the hand, and resembles a flabby mass in which breathing is hardly perceptible. This state may last twenty minutes without causing

death. The blood drawn from the arteries during this period still preserves its usual colour. Animals subjected to the action of amylene for a certain length of time continue after the operation in a state of stupor and imbecility, which sometimes lasts seven or eight hours; but in none of the cases observed by the authors of the communication has death followed the application of amylene. The conclusions resulting from their experiments are as follow:—1. Sulphuric ether, chloroform, and amylene are, of all volatile substances experimented on, the only ones that produce anæsthesia. 2. Amylene does not produce stupefaction unless the quantity of air with which it is diluted be very small; but then it acts upon the animal economy, and especially upon the respiratory organs, in a manner which may produce dangerous effects. 3. Chloroform has all the advantages of amylene, *without the evils* which accompany the use of the latter. 4. None of the substances above-mentioned produce anæsthesia, whether local or general, when applied to any peculiar part of the body by injection under the skin. — *Galignani's Messenger.*

Perchloride of Iron. Dr. Dowler reported in the New Orleans *Medical and Surgical Journal* for September, a case of a troublesome and alarming hemorrhage, following the extraction of a tooth. After trying various remedies without success, he saturated some lint with the perchloride of iron, and placed it in the socket, when the bleeding ceased.—*College Journal.*

ON THE NECESSITY OF SOUND PRINCIPLES AND UNITED ACTION.

To the Editor of the Quarterly Journal of Dental Science.

Sir,—The critical nature of the time now rapidly approaching, and the important influence which the measures then to be decided upon, are likely to exercise upon the interests of the Dental Profession, will be, I trust, sufficient apology for my seeking to lay before my professional brethren, through the medium of your columns, some of the views which I have been led to form.

I believe—and I think all those who know me will also believe, that whether my *opinions* be right or wrong, my *motives* are disinterested, and, that I am in fact actuated solely by the desire (not I think a dishonourable one), to gain its proper rank, respect, and reputation

for my profession, and thereby also to benefit the community at large.

So many discussions having of late taken place, both orally and through the press, it is unnecessary, I imagine, for me to enter minutely into the differences of opinion that have existed between the two societies, which claim to represent the Dental Profession. I shall confine myself chiefly to the broad, leading principles which ought to guide every member of our profession in common, for in this, as in all other matters, the surest way to attain a right course of *action* will be the previous establishment of true and right *first principles.* Proof of this might easily be drawn from every phase and path of life; taking however only one, but that the highest—what security have we in the moral world for a virtuous, honest, and upright life, except in the early inculcation and clear recognition of sound first principles?

Up to a very late period, I might almost say to the present time, the Dentist has occupied a kind of half-way and undefined position, being regarded as a subordinate auxilliary to the Physician and Surgeon, and has not had an independent and honourable position acceded to him by public opinion, *because he had not himself claimed and proved his title thereto.* The time has, however, come, Sir, when this state of things can no longer be permitted to exist; the Dental Profession now reckons amongst its members very many men, who, in point of scientific acquirements, professional attainments, and social influence, rank on a par with the members of other learned professions. It is not I think arrogating too much to ourselves to say, that a vast amount of the health, comfort, and happiness of society must ever depend upon the members of our body being *well-qualified* to discharge their professional duties with honesty and skill—and those duties, permit me to say, occupy a wide field, which is not taken in by any other profession. It is right and needful, that every Dentist should acquire an *accurate* knowledge of the anatomy of those parts upon which he will be constantly called to operate, and also of the leading principles of physiology in general; but beyond all this, he requires a long and careful *special training* for his own *immediate duties*—such a training as is not given in the education, nor demanded in the examination, either of the Surgeon or Physician. On this ground, then, chiefly, do I demand for our profession an independent position, similar to, and on a par with our medical and surgical brethren.

But if, on the one hand, we claim this status for ourselves, we

must on the other—not in isolated instances, but collectively as a body—shew ourselves *worthy* of it, by evincing a readiness to submit our qualifications to the test of public, impartial, and strict examinations. The very spirit of the age requires this. I may have my doubts whether this "examination spirit" is not rushing on too rapidly, and without sufficient regard to other matters, which are essential to the mental and moral training of every man, whatever his profession may be. But I *do* know that it is *too late now* to lay the spirit that has been evoked. In every department of professional life —the army, navy, civil-service; nay even in merchants' and bankers' offices—candidates for appointments are obliged to submit to this test of examinations. We have lately had some illustration of this fact on a broad scale in the establishment of middle-class school examinations by the Universities, the Royal College of Preceptors, and the Society of Arts.

It is then to guard the interests both of the public at large and of our own body, that I would earnestly impress upon my professional brethren, the importance of establishing, and *quickly* too, a regular system of education and examination for the dentist. The importance, nay the *absolute necessity*, must be patent to every impartial and unprejudiced mind, nor do I think that a single voice will be raised against it.

In order to establish such a system, it is an essential preliminary, that a complete *union of action* should be secured on the part of our profession. In this, as in all things, union will be found to be strength. Much good has undoubtedly been realized by the separate efforts of the two societies already in existence; but neither of them will ever be able, single-handed and alone, to accomplish so great a work as this of claiming and obtaining for our body that distinct and honourable *status* as a profession to which it is entitled.

There are obstacles sufficiently formidable to demand the *united*, vigorous, and unflinching efforts of every member of the profession, and, consequently, the union in the common cause, and under one common banner, of the two societies to which I have alluded. Let us not be diverted from so great, and good, and honourable an object as this, by any minor differences of opinion, or erroneous views of the superior claims of our respective societies. The object aimed at is one vitally important, both to the comfort and benefit of society on the one hand, and to our own honour and reputation on the other. Let us, one and all, then, be prepared to make such mutual conces-

sions as involve no breach of principle: let us turn away our eyes from self, and selfish considerations, and keep them steadfastly fixed upon these noble objects, viz.—the good of our fellow men, and the elevation of our own profession to its just and proper rank.

The interest awakened by the controversy which of late has been going on, has extended far beyond the ranks of our own profession; nor need we wonder at this, as it is a question in which the public at large are vitally concerned, and therefore naturally take an active and lively interest in. They now thoroughly understand and appreciate the "Examination question," and the guarantee of qualification which such a system can alone afford, and are therefore looking forward with anxious interest, to the course which the Odontological Society and the College of Dentists are about to take. If that course be what I have respectfully ventured to indicate—if those bodies do determine on waiving all minor points, and do not, by grasping at the shadow, lose the substance—if, in fine, they adopt for their golden rule the great Christian maxim of "doing as they would be done by," then I do believe that the coming year will inaugurate an era, fraught with much honour and happiness to our own profession, and with much benefit to the British public at large.

Yours obediently,

Cheltenham. SOMERSET TIBBS.

CASES IN DENTAL SURGERY, by J. T. KEENE, Esq.

To the Editor of the Quarterly Journal of Dental Science.

SIR,—In the first and second numbers of your valuable Journal, I find many interesting and instructive cases of Dental Surgery recorded; and, as a stimulus to others, I copy a few from my note book, hoping thereby to induce others periodically to do the same.

CASE 1.—M. B., an English woman, aged twenty-two, consulted me on the 6th of February 1857, having a fistulous opening in the left cheek, and, on examination, I found it communicating with the lower wisdom stump of the same side; she had been under medical treatment for some eighteen months prior to that period; as far as two years back she had had violent toothach, but dreaded so much a visit to a dentist that she employed all sorts of nostrums to cure it with indifferent success, and in a few months' time, had a swelling of the gland under the angle of the jaw-bone, when she consulted a medical man, who ordered leeches, fomentations, &c., which

treatment greatly reduced the tumefaction, and she remained comparatively free from pain and uneasiness for several months more, when she had again a return of the violent symptoms of pain, inflammation, and swelling of the gland, which was again attempted to be subdued by the same remedies which partially succeeded; but in a short time afterwards an abscess presented itself in the cheek, and broke externally, causing a fistulous opening leading to the root of the wisdom tooth; pus had escaped from the aperture ever since, until she consulted me; with difficulty I examined the mouth, as the attachment between the cheek and the maxillary bone was so strong, that I could not see the tooth, but felt distinctly with my forefinger a protruding edge, from alveolar border of the left wisdom tooth. I recommended extraction of stump, and she brought her medical adviser, who suggested the removal of the posterior molar, it being carious. I objected not, but told him candidly it was not the exciting cause, but should be happy to remove it, if he desired it. He expressed his wish and I readily extracted it; and by doing so, I was enabled most easily to use my elevator, and remove the embedded stump, which had at its apex a morbid growth of flesh. From the day I removed the tooth, no return of purulent discharge has occurred from the fistulous opening in the cheek, and, a fortnight after the operation, she was quite well. Of course, a disfiguring mark will for ever remain in her cheek.

Case 2.—A nurse aged sixty presented herself, with a tumour on the inside of the left cheek, corresponding with space between upper and lower wisdom teeth; on examining it I found it to be hard and of an irritable growth, suspicious in character, with an ichorous discharge, rather flattened, and size of a small chesnut; it had been several times cauterized with caustic without benefit. I inspected the teeth, and as I conjectured, found the cause to be, a constant habit she had contracted of biting the inside of the cheek during mastication. Upon examination, I found the upper wisdom tooth jagged on its outer surface; I extracted it, applied freely the cupri. sulph. to the tumour, and repeated the same three times afterwards at an interval of four days apart, ordering a gargle for the mouth of tincture of bark, rhatany, pellitory and borax. About a fortnight afterwards there was no vestige of tumefaction.

Case 3.—About twelvemonths ago, a young lady presented herself with a mouth anything but redolent of the civet. On inspection, I found the set of teeth free from disease, not so the gums, which

were of a bluish tint, readily made to bleed, in an indolent state, with a collection of tartar and thin pus around the neck of almost every tooth, burrowing under the gums encircling the teeth. My first plan was to scarify the gums unsparingly, and make them bleed freely; then remove the tartar from around each tooth, touch the gums afterwards with the cupri. sulph. and rinse the mouth with strong solution of alum, tincture of bark, rhatany and pellitory; the same treatment to be continued for some time, with the exception of the sulphate of copper, which ought to be repeated each week for about three or four applications. I have had numbers of very bad cases all give way to a similar treatment; it is evidently a species of scorbutis of the gums, causing local derangement, offensive breath, and if allowed to continue, might create further disturbance to the general health. I remain,

Your obedient servant,

JAMES T. KEENE,

Boulogne Sur-Mer, formerly

Assistant House-Surgeon to St. George's Hospital.

OUR FIRST VOLUME.

This Number of the Quarterly Journal of Dental Science completes our First Volume.

As we think a custom adopted by some Journalists—that of praising themselves, is one "more honoured in the breach than the observance," we shall leave it to our readers to draw their own conclusions as to the manner in which we have discharged our duty. We shall merely ask them to take a retrospective glance—to look at our opening address in the first Number, and the series of Editorial Articles and Professional Papers which have followed our prefatory observations, and then decide whether or not we have fulfilled every promise made by us at starting. At the time our first Number appeared, the Dental Profession was in a state of angry division, and divided into disorganized sections; and not only sectional, but worse—personal feeling was rife

amongst its Members. Individual abuse—the imputation of base motives, and even anonymous scurillity—had become a matter of course amongst a no small body of those who were prominently before the public, as the champions of Dental Independence. Some of the most eminent practitioners had been accused of falsehood, hypocrisy &c. by the parties contending, because they had differed in opinion from one or the other, as the case might be. Well, we resolved to do what we could, to put an end to such disgraceful conduct. We entertained a very decided conviction, that a mistake had been made by some leading members of the profession, in the plan of reform which they had adopted; but we were not unmindful that men may be mistaken without being corrupt. These gentlemen, too, were entitled to adopt that course which they thought best calculated to effect the object in view. On the other hand, the duty of their opponents was to reduce their number, to combat their doctrines, and expose the fallacies in their reasoning. Such a course was fair on both sides; and the soundest reasoners would naturally be the successful opponents. But personal abuse would not be among their weapons, as more likely to benefit their enemies than themselves.

These being our sentiments with respect to "the style abusive," we promised that no personal attack should appear in our Journal. We rejoice to say that we have our opponents' testimony to the fact, that we have scrupulously kept our pledge: and it gives us equal satisfaction to say that we have received similar treatment from all our contemporaries.

We, likewise, promised to supply our readers with a well digested series of papers on professional matters, surgical and mechanical. Thanks to a number of able practitioners, to whom we tender our most grateful acknowledgments, we have in this department also been able to keep faith with the profession.

We stated that our Journal should be educational. The papers to which we have just referred, together with the transactions of the College, so fully reported in our pages, are

we venture to think, a sufficient evidence that we are sensible of the vital importance of dental pupils acquiring a thorough knowledge of the profession in its higher branches, and of the dental practitioners of the empire being kept *au courant* with all discoveries and improvements in dental science.

It shall be our endeavour to make each succeding number better than its predecessor, and thus to continue to merit the good opinion with which the press, both at home and abroad, has been pleased to honour us.

THE COLLEGE OF DENTISTS OF ENGLAND, AND THE ODONTOLOGICAL SOCIETY.

Before these pages can be submitted to our readers, the Members of the College of Dentists of England will have received a code of propositions, the result of deliberations which have been going on between the Councils of the College of Dentists of England, and the Odontological Society, on the all-important subject of amalgamating the two Societies. We congratulate the profession most sincerely, that thus far there is every probability of its being represented by a united body of practitioners, and that hereafter we may hope to see enrolled beneath one standard, every respectable dentist in the three Kingdoms. The College of Dentists was instituted with the intention of offering the means of education to the younger members of the profession—to be in fact, the recognized medium for obtaining that knowledge which was felt by all to be necessary, in order that the future dentist might become a thoroughly qualified person; and we are gratified to find, that whatever changes are proposed, this *vital, fundamental principle* remains unaltered.

We trust that the Members of the College will attend the Meeting to be called on the 8th of January next, with

a full determination to give the subject their most serious attention, and decide upon the measure with the strictest impartiality. Let us not forget that on the occasion in question, an opportunity will be offered to cement the interests of the profession by a common tie, and, that such an event will most probably not occur again. Those who have laboured so indefatigably in connection with either Society, cannot reasonably be regarded as likely to continue their labours "*ad infinitum*;" and we feel bound to conclude, that should these proposals be dealt with in any other than the most liberal way, there will be a declension on the part of many, whose services and aid the profession should strive to retain. For obvious reasons we do not specify these propositions in detail, but we sincerely trust that shortly after the date of this Meeting, the Dentists of Great Britain and Ireland may be represented by *one* Institution, let it be called by whatever name it may.

DENTISTS APPOINTED TO PUPLIC CHARITIES.

In another part of the present number of our Journal will be found a list of Dental Officers appointed to some of our leading and opulent public charities in the metropolis. Undoubtedly *those* who have supplied that deficiency in the medical staff of a public charity, deserve the support of the public at large; for it must not be tolerated that the afflicted poor, who are obliged to apply to such institutions, in order to obtain relief from diseases of the teeth, shall be quietly and systematically handed over for experiment to the inexperienced hands of ordinary medical students, whose skill in the pathological, or operative knowledge of dental science, is even more limited than their acquaintance with anatomy and physiology. Why not, we may fairly ask, let these young gentlemen exercise their practical skill and matured professional judgment upon the eye or

the ear? These are specialities in most medical institutions, and professed aurists and occulists are appointed to take charge of them; but if medical pupils can be intrusted with the treatment of the teeth, we really cannot discover why the eye and ear may not be committed to their charge. Surely, if it is necessary to appoint an officer for the organ of hearing, and another for the organ of sight, it is of equal, if not greater importance, to appoint one for the dental organs, which are of so much importance as regards our general health.

Moreover, are not the diseases of the ear, and nervous affections of the eyes, frequently dependant upon the dental organs? Let us reflect how many nervous affections of the ears and eyes, not to speak of the jaws, are traceable to the teeth; and how many surgical operations are annually performed upon various parts of the human frame, which might have, in numerous cases, been avoided, if the patients had had the advice and assistance of a competent dentist in the earlier stage of the disease.

The *operating* surgeon of any public institution would not in any way lower his dignity, or blunt the edge of his operating knife, by consulting one of the *specialists* attached to his institution, unless, indeed, an operation conducted by the medical staff of an hospital, with all "the pride, pomp and circumstance," usual on such occasions, carries with it more *eclat* than a cure effected by a more simple process.

We have been led to these remarks, as regards our Metropolitan Hospitals, from an occurrence to which, on two previous occasions, we directed professional attention. We allude to the gross insult said to have been offered to the profession at large, and in a still greater degree to the benevolent supporters of public charities, and medical students, by a proceeding at the London Hospital, where (if report speaks truly,) the Dentist had been dismissed, and the *But-*

ler promoted to his office, with the right of continuing pantry duty.

The opinions so prominently set forth in the columns of this Journal, have been re-echoed by the daily and weekly press throughout the country. This has had its wholesome effect with the ruling powers at this Hospital, resulting in the appointment of a gentleman, well qualified, we believe, to fill this important office. So far then, as regards this Institution, nothing further can be wished for; but there are other charities in this metropolis to which no dental officer is attached. These charities are daily putting forth, by advertisement, solemn appeals to the public for aid and support for the *afflicted poor*. They have their Physicians, Surgeons, and Oculists, &c., but no mention is made of any "Dental Officer." Such a neglect on the part of the governors of any charitable institution, calls for the marked disapprobation of their supporters, and richly deserves the withdrawal of all contributions until such an officer is appointed.

DENTAL DISPENSARIES AND MEDICAL CHARITIES.

Under the above heading we have observed several letters in *The Lancet*, upon this important subject; but our especial attention has been recently directed to two:—one signed "*A Governor of a London Hospital*," the other "*Stamford Felce*."*

Now as the "*Governor*" is a mere *nom de plume*, and the name of the hospital is not given, we must infer, judging from the writer's tone, style, and conclusions, that he is a "Medical Practitioner," and, perhaps, well up in his anatomy, physiology, and *theoretical* surgery; but we much question whether, judging from his observations in the following letter (italics our own), whether his pupilage at the hospital has taught him the mechanical part of his profession, and

* *See* page 463.

made him a practical surgeon; for we contend, that in *operative* surgery it is not merely a theoretical and anatomical acquaintance with the parts that is required, but a thorough practical knowledge how to use the instruments when placed in the surgeon's hands. Hence it is how few in this large metropolis are really operative surgeons, in the true sense of the term. The same observations hold good as regards the dental profession, in the distinction between the mere theorist and the practical dentist.

We even go the length of concurring heartily in the observation of a very able writer, that "no art is complete, unless another art, that of constructing the tools, and fitting them for the purposes of the work, is embodied in it." This we believe to be sound doctrine; and if it is, the purely operative qualifications of a surgeon, or those of a dentist, must necessarily be dependent on the general principles of mechanics.

It is more than probable we should have permitted these letters to have passed, had they appeared in the ordinary public journals, but as they have been published in one of our medical periodicals, we feel called on to notice them, inasmuch as some of the observations of the writers (such as those upon stopping and extracting teeth) might lead other tyros in the medical profession to embrace fallacies in which they largely indulge.

The "*Governor*" says—"Again, stopping teeth is not more difficult than extraction." Indeed! We should very much like to put the "*Governor*" by the side of a dentist's chair, providing him with all the suitable instruments and gold foil, and then see him illustrate his theory. Were he even under such favourable circumstances kept without food until he had divided and scientifically stopped with gold *six concave lateral* openings in the incisor teeth, we much question whether the "*Governor*" would not find out, to the detriment of his digestive organs and his physical strength,

that he had mistaken his vocation, and that dentistry on paper, and the practice of the dental art, are very different things. So much for the "*Governor.*"

And now for "*Stamford Felce.*" This gentleman unquestionably has a much higher opinion of our calling than the "*Governor.*" We quite agree with him that the poor should have their teeth preserved. He refers to "over-worked officers and zealous students" at some of our medical institutions, and to a serious oversight, for which managers expose themselves to well-merited censure. The afflicted poor should not be left to the students or to an over-worked officer; and establishments in which this is done, deserve no public support. The time is fast approaching, when no medical staff at any medical charity will be complete without a *dentist*—public attention is being directed to this, and the public will soon learn to appreciate the institutions to which their benevolence should be directed. Moreover, it is said to be in contemplation to establish a "Dental Hospital" upon a large scale; in which case dental pupils will be thoroughly taught their profession under competent professors. Such an institution, would at once prevent the sad occurrences to which Mr. FELCE refers, and we have no hesitation in saying, a large amount of public support would be directed to such an institution, and much human suffering be prevented.

In such an establishment a competent dentist would of course be appointed as professor. Students would thus be sure to have their profession taught them in a scientific manner, and the poor suffering from diseases of the teeth should no longer be exposed to the frightful risks to which, in many instances, they are now every day subjected.

The two letters to which we have more particularly referred will be found in another part of our journal, under the heading "Miscellaneous."

THE DENTAL PROFESSION AND THE PHARMACEUTICAL JOURNAL.

The *Pharmaceutical Journal*, with a dulness that is positively amusing, persists in stupidly mistaking, or pretending to mistake, the motives which actuated the gentlemen who founded the College of Dentists. Our cotemporary, who is evidently brimful of hard words, and these, too, of not the most elegant selection, informs his readers that the promoters of the College of Dentists had an objection to be a "fungoid excrescence, on the College of Surgeons." Now, "fungoid excrescence" is undoubtedly a vigorous phrase, and the editor of the *Pharmaceutical* evidently imagines it to be, in this case, a conclusive one. So it might be, too, though rather an ugly compound, if it had applicability here: but as used by our learned cotemporary it is simple nonsense. Perhaps he knows it is, but thinks it good enough for his pharmaceutical friends, whose able management of their Society has been made so manifest by recent proceedings in the Law Courts. The late Mr. O'Connell used to tell a bar joke, with which, perhaps, the Editor of the *Pharmaceutical Journal* may be familiar, and from which he may have derived the idea that nonsense has more force than good reasoning, under certain circumstances. The story was, that the celebrated Curran, when on one occasion addressing the jury for a prisoner, exclaimed—"Gentlemen of the Jury, do not be led away by the dark oblivion of a brow." "Why, Curran," interposed a brother barrister, "that is nonsense." "Of course it is," rejoined the renowned wit; "but anything is good enough for a jury." We are afraid our "fungoid excrescence" friend is treating his clients after Curran's plan; but if not, it is rather hard of him to blame a number of gentlemen for not wishing to become what he so elegantly expresses.

However, the assertion has no more foundation than

the Editor's other "fact"—namely, that the dentists who established the College, were persons "whose attention had been directed to the mechanical rather than the surgical department." We had, indeed, thought that this latter allegation had passed into the region of the moribund, and become, what our erudite friend of the *Pharmaceutical* would, perhaps, call, a "fungoid excrescence" on the arguments of the opponents of the College.

The College of Dentists has, since its establishment, devoted so much attention to the surgical part of the profession—that department has been the subject of so many lectures, papers, and discussions—that the Council has, more than once, been charged with giving it an undue pre-eminence. What our contemporary means by "the other side of the Rubicon," as his classical allusion is put in the article before us, we cannot very clearly see; but this composition proves one thing to demonstration—that the Rubicon between "fudge" and sound reason is too wide for even the fire of such heavy metal as a "fungoid excrescence."

MISCELLANEOUS.

DENTAL MEMORANDA.

By T. Purland, Dentist, Phil. Dr. Surgeon-Dentist to the Mesmeric Infirmary.

Continued from page 346.

"Public Advertiser, March 1738.

"To the Nobility &c. of Great-Britain.

"Signor Grimaldi, who some time since resided in this City, famed for his agreeable Dentrifice Powder, which has given great satisfaction to most of the Nobility in England, who have made use of it, with an Italian Sponge prepared for that purpose; it cleaning

and whitening the Teeth to perfection, and entirely discharging all Symptoms of the Scurvey, without hurting the gums, which Brushes are apt to do.

" Also for his Balsamick Tincture, which fastens loose Teeth in a very extraordinary manner, did, at his departure, communicate in Friendship the Secret of his remedies unto GEORGE LAKE only, the Author of this Advertisement, by whom they are faithfully prepared, and continued to be sold, at the places following

At One Shilling each, and the Sponge Sixpence,

At Mr. John Lake's, Haberdasher of Hats, between the Temple-gates; Mr. Woodfall, Jun. At the Rose and Crown, facing the Pump, in Little Britain; and at the Authors House in Middle-Temple-Lane, over against the General Post-Office near Temple-Bar, London.

[*Note.*—Sig. Grimaldi, was Grandfather to the Celebrated Clown, Joe Grimaldi.]

" DAILY ADVERTISER.

" 1752.

" This is to acquaint the Nobility, Gentry, and others, that

PAUL JULLION, Operator for the Teeth,

" *At the Two Heads in Coventry-Street, between Piccadilly and Leicester-Fields,*

" HATH by his own Art and Invention, improved by a long series of Practice and Experience, as well at Home as Abroad, acquired such skill, Dexterity and Perfection, in Making, fitting and setting of Artificial Teeth; as never yet hath been equalled, not even by the most celebrated Foreign Dentists; since it was failing of success in his own case, on reiterated Trials, with the ablest of all Nations, that first gave rise to his inventing and perfecting an Art, too frequently necessary to Mankind; tho' it has unfortunately hitherto been so bunglingly and uselessly attempted by others, as to discourage many from applying for relief, which they may now be assured by his assistance effectually to find; As he not only makes and firmly sets from one single tooth to any number that is wanting, in

the Fore or Side part of the Month, but also complete half-sets, (where not a Stump remains in the Mixilla, or Jaw) and entire whole sets (where not a Stump or Tooth is remaining more in the Mouth;) which effectually serve every use of natural ones; either in Mastication (allowed by all Physicians essential to Digestion and Health) or in distinct Pronunciation, and the graceful ornament of the Mouth; preventing Rheums and scorbutick Defluxions on the Gums, and being at the same time a Preservation and actual support to the remaining natural ones; it has been satisfactorily found true, that he has succeeded in such Cases as the most eminent Operators (of all Countries) have no less expensively than vainly attempted.

"He sets his artificial teeth without the least pain, as firm as Natural ones (from the most beautiful of which, they are not to be distinguished); most successfully fastening them on one or more stumps of decayed or broken Teeth, without putting the Patient to the Pain or expence of having them drawn: He fastens loose Teeth directly, and preserves them in if sound, and the Gums not too much consumed by the Scurvy, in which case he draws them with as little pain as possible, substituting immediately fine Artificial ones in their Place; He fills up, and thereby preserves hollow Teeth from decaying farther, and prevents their affecting the breath; furred and foul Teeth, scaled and cleaned to the greatest nicety and Perfection: This Operation is recommended to all that have otherwise a good Set of Teeth, as the only means to preserve their Breath sweet, their Gums sound, their Teeth entire, fast and white, so necessary to form the agreeable in either sex; whoever pleases to come or send to him, will be sure of meeting with full Satisfaction on moderate Terms.

"All Gentlemen of the faculty of Medicine, who will be pleasant to recommend him, shall on intimating their pleasure, have ocular Demonstration of everything here advanced.

"☞ But to prevent any further fruitless Application of his Materials, Labour and Pains, as also the loss of time (still more precious to him and the well-meaning public), he will for the future, undertake no Operations in Artificial Teeth, unless half the Money agreed to be paid for them, be deposited in his hands at the time they are bespoke.

[This worthy was too clever to live long, and when he was gathered to his fathers, a very pretty quarrel took place beween his Widow and a Mr. Bellejean; of which more anon.]

" MORNING POST, 1752

"LEGGE,

" PERFUMER AND SNUFFMAN,

" *At the Civet-Cat, near the Admiralty-Office, Charing-Cross,*

" Begs leave to inform the Nobility and Gentry,

" THAT the only true original DELESCOT'S OPIATE and TINCTURE (from the Genuine receipt) for the TEETH and GUMS, has these words, on the Seal of each Pot, or Bottle, viz. By LEEZE and Co. and be well assured, all others are Counterfeits, and an imposition on the Public.

DENTAL DISPENSARIES AND MEDICAL CHARITIES.

The following Two Letters are extracted from the LANCET, *and are those referred to in page* 456.

I read with much interest in THE LANCET of October 31st of the opening of a Dental Dispensary. No doubt this institution supplies a real want. The poor, who cannot pay a dentist, cannot expect the parish doctor to stop teeth or supply the place of lost ones. They must therefore go without, suffering the loss of tooth after tooth, and the consequent dyspepsia and other maladies which come upon them, unfit them for work and shorten their lives, without the means of obtaining relief, and often without knowing what is the cause of their sufferings. The extent of this evil amongst the poor is very great: probably, half the poor, both men and women, who have attained forty years of age, are unable, from loss of teeth, to masticate their food. Unless, therefore, they could establish amongst themselves " tooth clubs," on the principle of benefit clubs, which is not likely, they cannot obtain artificial teeth without the aid of some institution like this. Medical writers and medical practitioners should bear in mind the position they hold in the body politic, and the *whole* duties they owe to it; and should well consider the effect and tendency of all their proceedings, not only upon themselves, but also upon the nation. For example, it is the fashion of the day to found endless dispensaries, &c., some general, others for special diseases. This may serve the purpose of Mr. A., or Dr. B., who want to get into practice, or to become noted for some speciality, or to write after their names

"surgeon to such and such a dispensary," (I have been one myself); but what is its effect upon the community? What benefit to the public is proposed by having so many dispensaries? Who are they to help?—those who cannot pay, or those who can? For those who cannot there is the parish doctor, and, in extraordinary cases and accidents, the great hospitals. For those who can pay, there are but too many private practitioners, quite ready to physic the lesser patients at the cheapest rate; and for these, again, when they can pay no longer, or in case of extraordinary illness, there are the great hospitals. There is a class between, whose medical wants are partly supplied by benefit clubs, partly by hospitals. Yet still new dispensaries spring up, and the great hospitals, to keep pace, admit out-patients without letters of recommendation!

What is the effect of all this upon the people? Why, they find that they never need make provision for the future as regards medical attendance, seeing they can always get it for asking. What need, then, to subscribe to a benefit club? What need to save a little money to pay a doctor? What need to be provident? They may squander their cash at pleasure, and, when ill, walk to the nearest hospital for advice and medicine, and demand it as a right. Such numbers do this, that many who can well afford to pay become out-patients instead, thinking themselves unnoticed in the crowd. I have seen them, and noted them by scores—aye, and prescribed for them. And still, as the dispensaries multiply, the crowds of applicants increase; and so they will increase *ad infinitum*. The supply forced upon the public, creates a corresponding demand, which will grow to any extent, without the least reference to the necessities of the community. Every hospital and dispensary *boasts* of the increasing numbers of its applicants. Is this a healthy moral tone of the lower ranks of society? Are the tendencies thus imparted sound and salutary ones? Can we estimate their ultimate effects? or do the subscribers and benefactors to the charities ever inquire into these points.

And for ourselves, as medical men, do we not see how undignified it is thus to thrust our unasked-for services upon the public? Can we not discern the signs of the times? Do we not note how everywhere the lower orders take as a right, without thanks, and as if they were doing *us* a favour, our gratuitous services? And, finally, is not the medical profession, which includes some worthy struggling members, wronged of many thousands annually by this and other methods of giving advice gratis?

Do not let us lend ourselves, even for present self-benefit, to this mischievous system. Let us exercise some self-control; and when a new institution is proposed, let us see whether the want it is intended to relieve may not be amply, or if not so, partially provided for, by machinery already in existence. For example, with regard to dentistry. Several of the large hospitals have surgeon-dentists on their staff, so the poor are not in this respect wholly unprovided for. *Again, stopping teeth is not more difficult than extraction. May not the teeth of the poor be stopped, as well as extracted, for small charges?* And may they not be encouraged and advised to have this done, instead of waiting till toothach comes, and so losing their teeth? A little foresight and trouble on the part of both patient and practitioner would thus *prevent* all this loss of teeth and the consequent evils; and the inculcation, at all available opportunities, both by medical and dental practitioners, of proper care of the teeth, would render unnecessary a multiplication of dental dispensaries.

The subject of Dental Dispensaries is indeed one that demands the attention and support, both of the profession and of the public, and I am glad to see that you are amongst the first to recognise its importance, and to advocate its claims. It may appear to some, that the loss of a tooth or two, to a poor man, cannot be a matter of much consequence to himself, much less to the public at large, and that we are indeed carrying our charitable operations *a little too far;* but the fact is, that comparatively few know the wholesale manner in which teeth are removed at our metropolitan hospitals and dispensaries; but those who do will agree with me, that if we do not endeavour to check this, merely as a means of improving the appearance of the lower classes (and even this should have some weight with us), still we ought to do it as a means of preventing disease; for I am sure, from repeated observation, that the loss, as well as the unsound and unhealthy state of the teeth, is a prolific and constant cause of disease, not only local, but of the various forms of dyspepsia, and a whole host of other diseases, of which dyspepsia is but the precursor.

Toothdrawing, as carried on at our different medical charities, is generally a most barbarous proceeding; it either falls to the lot of an *already overworked officer, or to any zealous students who may chance to have a taste for dental surgery*, and who seem to have an idea, that strength of arm (or *nerve*, as they generally describe it), is the chief

requisite for a good operator; and I have frequently seen a man tugging away at a tooth, with the first instrument which came to his hand, right or wrong, much in the same manner in which he would take out a rusty and bent nail from a tough board, causing the poor sufferer an agony of pain, while the result is sometimes the extr ction of the tooth, sometimes the fracture of it, and occasionally the removal of a good-sized portion of the alveolar process; whereas, with a proper instrument in the hands of a man who understands what he is doing, extraction is at all times a safe, and seldom a very painful operation. But, after all, this is the minor advantage to be derived; the principal object is to *preserve* the teeth, and as much as possible to render serviceable those in which caries has made its appearance.

For two years during which I held an appointment at the Western General Dispensary, the average number of teeth extracted was nearly three hundred per month, or about three thousand five hundred per annum; certainly a great proportion of these were the deciduous teeth of children; but of the remaining number I can safely affirm that, had time and care been devoted to them, at least *one thousand* might have been preserved and rendered useful. To tell the poor patient this, and to bid him go to a dentist, is merely to mock at his sufferings, without affording him relief, and therefore extraction is the only alternative under existing circumstances.

As you very justly observe, the expense attending these dental dispensaries would be but small; the greatest expenditure in these cases is time; and I have no doubt but that there will be plenty of good men in this branch of the profession forthcoming, who are willing to devote some portion of their time to the relief of their poorer neighbours.

REVIEWS.

The Microscope, its History, Construction, and Application. By JABEZ HOGG, Esq.; Third Edition, 600 pages. Routledge & Co. London.

Mr. Jabez Hogg has for several years held a very high position as a practical microscopist, and the results of his investigations, he has from time to time published in unmistakeable and readable language: judging from the appearance of the

third edition of his work, it must have received a European reputation, both as regards the public and the medical profession.

It is, however, to the present edition we would direct the especial attention of the members of our own profession, inasmuch, as the author has devoted very many pages to the microscopical structure of the teeth—a subject he treated most ably before the Members of the College of Dentists, in a series of lectures, illustrated with diagrams, and which have been fully reported in this Journal. In these lectures, important truths were brought before the Members of the College—the cobwebs of worn out, though hitherto-accepted theories, were satisfactorily controverted and "shelved." Mr. Hogg proved to demonstration that the simple application of the microscope had at last become a practical and valuable adjunct to the true investigation of our own particular science. Those who had longed for satisfactory investigation, felt that the plain and simple explanations given in these lectures, indicated a direct road by which they might arrive at scientific truth, and its practical results. It is only within the last few years the microscope has been heard of, and as for its practical application and uses, the science was confined to a limited few, who merely published the results of their researches. Now such publication was most praiseworthy; but still the *practical* application was a privilege of the few. We all gulped down "Researches," and liberally swallowed the "powers of magnitude," as if they were so many "natives," never of course presuming to venture upon a controversy with one skilled and learned in microscopical investigation. Owing, however, to the force of circumstances attending the social and liberal movements of our profession, the uses of the microscope are now within the reach of the most humble member of our profession. He can now, by the aid of such a work as this before us, read and investigate for himself, and can moreover practically test and judge the scientific investigations of others. This alone is a step in the right direction to raise our profession to that *status* to which we contend it is justly entitled. It is to the author of

this work, the profession and the public are indebted for a cheap and well-digested manual of microscopic investigation, which cannot fail to make the subject one of universal interest; and, although the present edition is brought out at a lower price than either of the former ones, the author has added many valuable wood cuts upon the structure of the teeth.

As evidence of what we have said in reference to the additions to this book, as regards tooth structure, we will quote from page 567 of the work:

"The teeth of man and of most of the higher animals are composed of three different substances, *Dentine* (known as *ivory* in the tusk of the elephant), *Enamel* and *Cementum*, or *crusta petrosa*. These are variously disposed, according to the purposes which the tooth is to serve: in man the whole crown of the tooth is covered with enamel; its root or fang is covered with cementum, whilst the substance or body of the tooth is composed of dentine.

"In the human subject, two sets of teeth are developed, the milk and permanent: the first are formed from one set of bulbs, which in time shrink, and let the teeth fall out; the permanent set is then produced from new bulbs, situated by the side of the old ones. Blandin was the first to point out that the teeth are developed in the mucous membrane, in a similar way to hair and nails. Other observers have been led to the same conclusion; and, more lately, Professor Goodsir demonstrated that the teeth are first formed in grooves of the mucous membrane, and subsequently converted into closed sacs by a process of involution, and that their final adhesion to the jaw is a comparatively late part of the process. It is now generally conceded that teeth belong to the *muco-dermoid*, and not to the periosteal, series of tissues; that, instead of standing in close relation to the endo-skeleton, they are part of the dermal, or exo-skeleton; their true analogues being the hair, and some other epidermic appendages. Professor Huxley has proved that although teeth are developed in two ways, these are mere varieties of the same mode in the animal kingdom. In the first, which

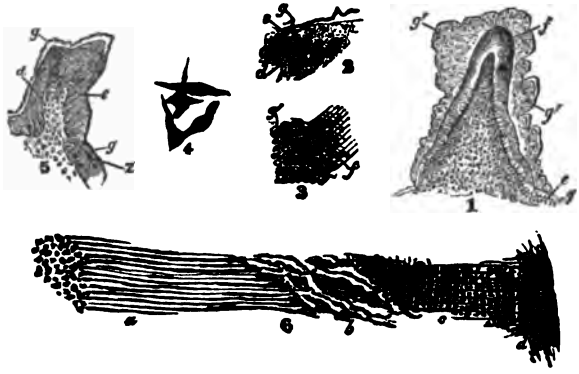

fig. 1.—*Tooth Formation.*

1. A section of a cusp of the posterior molar, upper jaw of a *fœtus*. The inner outline represents it before the addition of acetic acid—the outer afterwards, when Nasmyth's membrane *g* is seen raised up in folds: *f*, the enamel organ; *e*, the dentine. The central portion is filled up with pulp. 2. Edge of the pulp of a molar cusp, showing the first rudiment of the dentine, commencing in a perfectly transparent layer between the nuclei of the pulp and the *membrana præformativa*. 3. Nasmyth's membrane detached from the subjacent enamel by acetic acid. 4. The stellate cells of the enamel-organ. 5. Tooth of the frog, acted on by dilute hydrochloric acid, so as to dissolve out the enamel, and free Nasmyth's membrane. The structure of the dentine *e* is rendered indistinct. At the base, Nasmyth's membrane is continued over the bony substance at *z*, in which the nuclei of the *lacunæ* are visible. (After Huxley). 6. Decalcified tooth structure; *a*, the dentine; *b*, enamel organ; *c*, enamel; *d*, Nasmyth's membrane.

may be typified by the mackerel and the frog, the pulp is never free, but from the first is inclosed within the capsule, seeming to sink down as fast as it grows. In the other, the pulp projects freely at one period above the surface of the mucous membrane, becoming subsequently included within a capsule formed by the involution of the latter; this occurs in the human subject. The skate offers a sort of intermediate stage.

"The *enamel* forms a continuous layer, and invests the crown of the tooth; it is thickest upon the masticating surface, and decreases towards the neck, where it usually ter-

minates. The external surface of the enamel appears smooth,

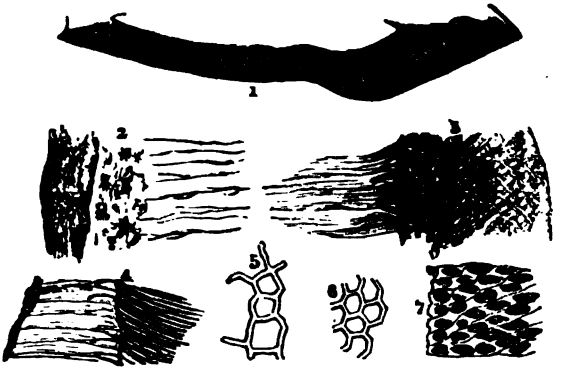

fig. 2.—*Tooth structures.*

1. Longitudinal section of superior canine tooth, exhibiting general arrangement, contour markings, and slightly magnified. 2 and 3, Portions of same, highly magnified, shewing the relative position of *bone-cells*, cementum. 2, Dentine fibres, and at 3, the commencement of enamel. 4, Dentine fibres decalcified. 5, Nasmyth's membrane separated and the calcareous matter dissolved out with dilute acid. 6, Cells of the pulp lying between it and the ivory. 7, A transverse section of enamel, shewing the sheaths of fibres with the contents removed (magnified 300 diameters).

but is always marked by delicate elevations and transverse ridges, and is covered by a fine membrane (Nasmyth's membrane), containing calcareous matter: this membrane is separable after the action of hydrochloric acid, it then appears like a network of areolar tissue, shown in No. 6. This is Huxley's *calcified membrana preformativa of the whole pulp.* Nasmyth says: "In all cases where this covering has been removed by means of acid, it has, of course, the appearance of a simple membrane, in consequence of the earthy deposit having been dissolved out, and the animal tissue only remaining. The structure and appearance of the covering detached in this manner from the enamel, is the same in every respect as that observed in the capsule of the unextruded tooth, and consisting, like it, of two layers, fibrous externally, and having on its internal surface the peculiar reticulated appearance common to both."

"On examining carefully fine sections of several teeth under the microscope, I perceived here also," observes Nasmyth, "that the structure in question was continuous with the *crusta petrosa* of the fang of the tooth."

"The enamel has a fibrous bluish aspect, is very brittle, and is much harder than the other dentinal structures; it is, indeed, so hard, that it strikes fire with steel; if an attempt is made to cut it without the application of water to keep it cooled down, it burns with an ammoniacal odour, such as we perceive when horse-hoof is burnt. It is composed of prisms, about 1-5000th of an inch in breadth, more or less wavy, and transversely striped. Two kinds of bands or stripes are seen traversing enamel, the direction of one of which nearly coincides with that of the dentine fibres; the other set of stripes indicate the laminated structure of enamel. Under polarised light, a third set becomes visible, arising from the variable inclination of the axes of the fibres to the plane of polarisation. The enamel is often traversed by cracks or fissures, mostly running parallel with one set of the fibres; these are sometimes described as canals, but they resemble splits, and are seldom seen in young teeth, it is more likely that they are caused by the nature of the food and drink, which is taken into the mouth at various degrees of temperature; we can also trace the commencement of disease from a fissure in the enamel. When a section of the enamel is cut obliquely, it has somewhat of a hexagon or six-sided appearance. The dentine consists of a transparent basement membrane, with alternating layers of calcareous matter, traversed by very fine branching tubuli, which commence at the pulp cavity, and pass up the enamel.

Czermak discovered that the curious appearances of globular conglomerate formations in the substance of dentine, depend on its mode of *calcification* and the presence of earthy material; and he attributes the contour lines to the same cause. Contour markings vary in intensity and number; they are most abundant in the root, and most marked in the crown. Vertical sections exhibit them the best. In prepa-

ring a specimen, first make the section accurately, then decalcify it by submersion in dilute muriatic acid; then dry it and mount in Canada balsam with continued heat, so as to allow the specimen to soak in the fluid resin for some time before it cools. It is a white opacity at the extremity of the contour markings that gives the appearance of rings on the tooth-fang.

"The tooth-substance appears," says Czermak, "on its inner surface, not as a symmetrical whole, but consisting of balls of various diameter, which are fused together into a mass with one another in different degrees, and on which the dentinal tubes in contact with the germ cavity are terminated. By reflected light, *back-ground* illumination, one perceives this stalactite-like condition of the inner surface of the tooth-substance very distinctly, by means of the varied illumination of the globular elevations, and by the shadows which they cast. Here one has evidently to do with a stage of development of the tooth-substance; for the older a tooth is, the less striking in general are these conditions, and the more even is the surface of the wall of the germ cavity. In very old teeth considerable unevenness again makes its appearance; these, however, are not globular, but have a cicatrised, distorted appearance. It is best to make the preparation from a tooth of which the root is not perfectly completed. With such preparations, one is readily convinced that the ground-substance of the last-formed layer of the tooth-substance appears, at least partly, in the form of balls, which are fused one among another, and with the balls of the penultimate layers; and one also perceives that in general their diameter becomes less and less, somewhat in the form of a point, towards the periphery of the tooth-substance. To obtain specimens, procure a tooth of which the fang is half-grown; then introduce the point of a penknife into its open extremity, and scraping the inner surface, detach small portions, which exhibit the globules admirably.

The cementum is the cortical layer of osseous tissue, forming an outer coating to the fangs, which it sometimes cements together. It commences as a very thin layer at the

part where the enamel ceases, and increases in thickness towards the ends of the fangs. Its internal surface is intimately united with the *dentine;* and in many teeth it would appear as if the earliest determined arrangement of the fibres of the dentine started from the *canaliculi,* as they radiate from the lacunæ in the cement. The interlacunar layer is often striated, and exhibits a laminated structure: sometimes it appears as if Haversian canals were running in a perpendicular direction to the pulp cavity. The *canaliculi* oftentimes run out into numerous branches, connecting one with another, and anastomosing with the ends of the dentine fibres. The thick layers of cement which occur in old teeth show immense quantities of aggregated lacunæ of an irregular and elongated form. Professor Owen believes that by age the pulp ceases to produce or nourish the dentine: it then becomes converted into *osteo-dentine,* and thereby the layer of crusta is so much increased as often to fill up the pulp cavity of the tooth. Professor Simmonds assures us that this is not the case in the *Herbivora.* For instance, in the horse, the obliteration of the cavity is gradually effected by an increased formation of dentine; and this is not supplanted by an *abnormal,* or diseased growth, as would be the case were the pulp to become ossified, but as the pulp diminishes, so is the supply of nutriment to the tooth lessened, and at length entirely cut off from the interior. "To provide for the vitality of the tooth, under these circumstances, the crusta increases in quantity on the fang, at *the expense of the perfectly-formed dentine,* which is lying in immediate contact with its inner surface. Through the medium of the canals in the crusta, which open on its borders, the tooth now draws its nourishment from the bloodvessels of the socket; and thus it continues, long after the obliteration of its pulp cavity, to serve all the purposes, as a part of the living organism."

We most cordially recommend all those of our readers who feel a scientific interest in their profession, and the advancement of dental science, to provide themselves with a copy of this cheap and able work on one of the most wonderful of modern instruments

On a New Method of Fixing Artificial Teeth. By J. MAURICE, Surgeon-Dentist. Messrs. Piper & Co., London.

The author's object in publishing his pamphlet, is to make known an improvement whereby the usefulness of an already invaluable art may be greatly extended. He very properly observes, that although the means by which artificial teeth are supported in the mouth, involves a large amount of ingenuity, there are objections which have baffled the most experienced practitioners to overcome, viz., the unsightliness and injurious effects of clasps and wires, objections, he says, which his discovery completely obviates. After giving a brief history of artificial teeth, as worn by the Greeks and Romans, he gives us the first discovery of mineral teeth, by Duchatell, a French chemist, of St. Germains, who was not himself completely successful, but sought the assistance of an able dental practitioner, M. Dubois, who, by his superior practical knowledge, ultimately produced various specimens, and manufactured them for the profession in France.

The author of this pamphlet details the various methods employed for inserting artificial teeth, and the injury to the natural organs—from galvanic, mechanical, and chemical action. The substitute he gives us, is the application of (we now quote the author's words) "vulcanized india rubber, in the form of *tubing*, which is drawn over the bands in the same manner as a glove covers the fingers, a plan at once efficient, simple, and easy, by reason of its elasticity: it clings to the fastenings, adapting itself to their form, and is rendered so secure as to prevent its removal by accident; nevertheless, it can be replaced, when required, with the greatest facility. Its substance, and the size of its aperture, will, of course, depend on the character of the case; and I have succeeded in obtaining it so small, as to fit tightly on the smallest wire used. He then proceeds to describe the advantages appertaining to its use, such as colour, flexibility, and softness of the material, which prevents the unpleasant *jar* and *pain* caused by the pressure and contact of metals with the necks of the teeth."

We are aware, that some of the most eminent dentists have often had recourse to the covering of clasps and wires with waxed silk, and with gutta percha, but enclosing them in a vulcanized tube of india rubber, we had not before heard of. We question, however, whether the disagreeable odour and taste emanating from this substance, when submitted to the temperature of the mouth, will not retard its general application, even presuming it to answer all the advantages described by the author.

We much regret, the author should have been so ill-advised, as to purchase letters patent: he should, after testing his discovery, have at once brought it before the College of Dentists, and laid it openly before the profession. The practice of obtaining dental patents in this country, has been very properly discountenanced by the whole profession. In fact, had the author consulted the published rules, emanating from both dental societies, he would have learnt the feelings entertained by both, as regards patents; moreover, had he inquired, he would soon have ascertained the fate of all dental patents in this country. We hope to see that our American brethren will follow our example, and discourage such an exclusive proceeding.

The Dentist.—A Monthly Periodical, devoted to Dental Surgery and Mechanics. Published by L. W. Z. SCHMEDICKE, Practical Dentist, Berlin.

We have received nine numbers of this periodical, from which we shall occasionally give our readers extracts.

There are several original contributions upon Abscess in the Antrum, and Anomalous Development of the Wisdom Teeth; Pathological Essays upon the Teeth; Tumours in the Palate; Fibrous Tumour in the Lower Jaw; Additions to the History of Dental Surgery; an Indestructible Basis for Artificial Teeth; Case of Fracture of the Upper Jaw; new Method of destroying the Nerves of Teeth; new Method of treating Loose and Tender Teeth; new Mechanical Contrivance for correcting Irregularities of the Teeth.

Notes of a Lecture upon Zoology. By T. SPICER, LL.D., M.A. Saunders, Charing Cross.

Zoology has occupied the attention of some of our greatest men of the age—amongst whom we can boast of one who follows the profession of a dentist. The study of natural history has become most important as an element in education, consisting, as it does, of the consideration of those physical objects which are constantly before our eyes, and which must necessarily engage some portion of our attention. Jesse well observes—"It has higher claims than we assign to it: it leads us to investigate and survey the workings and ways of Providence in this world of wonders; and, while it furnishes meditation for the closet of the studious, gives to the reflections of the moralizing rambler admiration and delight." If then we find a Hunter, Owen, and a Beever, who have devoted their best energies to the study and the classification of natural history, we surely ought to make this subject a portion of our systematic education amongst the rising generation of dentists.

A Treatise on the Use of Adhesive Gold Foil. By ROBERT ARTHUR. Messrs. Jones, White & McCurdy. Philadelphia, 1857.

Those of our profession on this side of the Atlantic, who are in the habit of reading the American periodicals, must be well acquainted with the author of this treatise. To ourselves his name is as familiar as a "household word;" his contributions to dental literature have been particularly marked for their real practical tendency, and their being conveyed in language easily understood by the merest tyro in the profession. At the same time he avoids that verbose and didactic style so prevalent with many of our American friends. The subject of the present treatise is upon the varieties of gold used for plugging teeth, and upon "annealed gold," in particular, in a method discovered by the author

himself: he says—"I am constantly receiving applications for further information relative to the 'New and improved Method of using Gold Foil," of which I gave an account in the *Dental News Letter*. It appears that a large number of dentists have, to a greater or less extent, adopted in their practice the new method of filling teeth, but have found it attended with some difficulties; and that others, after a few imperfect trials, have rejected it." He further on states:—I am well convinced that it possesses very great advantages, and must be adopted to a considerable extent, by every operator who fully understands it: but with every new system, a want of knowledge of what appear to be unimportant details, leads to difficulties which embarrass those who attempt to adopt it, and prevents such attention to it as is necessary to an appreciation of its true value." To this latter statement we cannot subscribe, although the author has kindly "glossed" over the imperfections and other short comings of our craft—and has paid his professional brethren a one-sided compliment. We should have preferred wholesome observations somewhat in this style:—"Some of you are too conceited—others too self-willed, and prejudiced against a new discovery, or, perhaps, an innovation upon prescribed rules and regulations, or, too self-opinionated, if not too dull, to absorb the scientific improvements and discoveries made in our profession." These observations would, perhaps, be more in accordance with the unvarnished truth. The day has past for authors and contributors to dental periodicals being sentimental—the profession requires practical and scientific writings. We have, for the last half century, had enough of your "theorists", and used-up monthly nurses, as dental practitioners, and we do abhor the system of pandering to the follies, or perhaps, in too many instances, the dotage of "antique" practitioners.

The author has divided his work into sections, as follows:—Adhesive gold foil—Gold—Common methods of using gold foil—The rope—The strip, or tape—Pellets—Cylinders—Formation of the cavity—Employment of No. 30

foil—Adhesiveness, formerly considered a defect—Sponge, or crystal gold—Annealed gold—Heating the foil before using—Instruments—Hardening and tempering—Preparation of the gold—Method of preparation for use after heating—What No. of gold is most suitable—Method of filling with adhesive gold—Fixing the first pieces introduced—Defects in the filling—Other difficulties attending the use of adhesive gold—The saliva—Method of applying napkins in the lower jaw—Mucous secretion—Styptics—Pressure—Tin foil—Can gold be welded?

The treatise, moreover, contains a full description of the various modes of preparing gold for filling teeth, as practised for the last twenty years. One part is specially devoted to the art of making and tempering instruments, and is not only highly interesting, but instructive to every dental practitioner. We most heartily recommend the treatise to our professional brethren, as one honestly sent amongst them for their benefit. The author asks only that, which ought in common justice be complied with, viz. that those who feel an interest in the advancement of their profession, shall make trial of his new discovery, in accordance to the directions he has so clearly laid down in his ably-written treatise.

The Dental Register of the West (Quarterly). Edited by J. TAFT and GEORGE WATT, September 1857. Cincinnati: Published by Wrightson & Co.

This is the first number of this periodical received by us since the commencement of our own publication, and we most heartily congratulate the editors and contributors, on the *really practical* papers selected for publication. It has hitherto been a *fault*—and we feel assured our professional brethren on the other side of the Atlantic will forgive us for stating the fact—that the dental papers in American publications have been too verbose, and required the pruning-knife of the editor to cut them into a really practical shape. We are aware of the request so frequently made by contributors,

that their papers shall appear just as they send them; but it would not be always judicious to comply with that request. We admire theoretical articles, to a certain extent. When a new discovery is introduced, great allowance for scientific speculation must be made; and it is quite right of an editor to devote a certain amount of space to such matters, but not to the exclusion of that real practical information which is required by the profession at large. To this point, it is evident, the editors of the *Dental Register* have directed their attention: for we find amongst the original communications some valuable practical papers, deserving our especial attention, and from which we will extract in the next number of our journal.

NOTICES TO CORRESPONDENTS.

*** We regret to be obliged to hold over several interesting articles forwarded to us for publication: they shall appear in our next number.

Letters will not be inserted in this Journal unless authenticated by the name and address of the writer, not necessarily for publication, but as a guarantee of good faith.

It is requested that contributors will write legibly, and on one side of the paper only.

*** **The first Volume of The Quarterly Journal of Dental Science is now ready, bound in cloth, with Index, and may be had of the Publishers.**

Communications, Letters, &c. have been received from:—Mr. Barrow; Mr. Robinson; Mr. Hill; Mr. Mackenzie; Mr. Bennett; Mr. Keene; Mr. Tibbs; Nemo; Mr. Purland; Mr. H. Harris; a Governor of a London Hospital; Stamford Felce, &c. &c.

Surgeon, Walworth.—We would recommend you advising your patient to consult Mr. Bowen May, Russell Square; he has repeatedly and successfully prosecuted persons guilty of extortion such as you name.

Mr. R. Weston.—A good opening appears in the locality you mention, for a really expert operator; if otherwise well acquainted with his profession.

A Young Dentist.—We decline recommending *specially* any one particular dental establishment.

Mr. Ashton.—Will receive a private letter.

W. H. F.—Will find the fer. chloride of carbon. applied with a camel's hair pencil, answer the purpose.

OBITUARY.

It is with sincere regret we are called upon to announce the premature death of Mr. Robert Nasmyth, of Brook Street, Grosvenor Square, at the residence of his father, in Edinburgh. In recording the death of this esteemed and respected member of our profession, we feel no hesitation in stating, that our regret is shared by all his professional brethren who had the pleasure of his personal acquaintance.

Previous to Mr. Nasmyth commencing his professional career in London, he visited the United States, and became personally acquainted with the leading dental practitioners in America. He had only been in practice a few years, and had he been spared, there is little doubt, from the intimate knowledge he possessed, and the habitual industry he displayed in the various practical requirements of his profession, combined with that modesty which characterizes genuine ability, he must eventually have attained a very high position as a scientific dental practitioner.

At the present time, when noble, strenuous, and disinterested efforts are being made to raise the status of our profession to that dignity and position to which it is justly entitled, we can but ill afford to lose one who possessed such sterling qualifications, and so kind a heart as the late Robert Nasmyth.

The profession has also to regret the decease of Mr. Joseph Barker, (late of No. 2, Crescent, Blackfriars, formerly of Fleet Street), which took place October 3rd ultimo. The subject of this notice was originally intended for the medical profession, and pursued his studies under the superintendence of the late Dr. Carpue, in the years 1826 and 27. Dentistry, however, engaged his ultimate attention, and he entered on its prosecution with Mr. Canton, Sen. of St. Martin's Lane, as his instructor, commencing practice in the year 1828.

Mr. Barker was a warm supporter of the College of Dentists of England, having at the first sent in his adhesion to that institution, which he firmly believed would be instrumental in producing professional reform. In his practice he is succeded by his sons, Messrs. William and Charles Barker.

END OF VOL. I.

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